

ELLIS'S

HUSBANDRY,

ABRIDGED AND METHODIZED.

VOL. II.

REVISED
E. L. 1242
ABRIDGED AND METHODIZED

H. 2. 3. 4. 5. 6. 7.
COMPREHENDING THE HISTORY



ABRIDGED
PRACTICED

VOL. II

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Printed by W. A. ...
London

ELLIS'S
HUSBANDRY,

ABRIDGED AND METHODIZED:

COMPREHENDING THE MOST USEFUL ARTICLES OF

PRACTICAL AGRICULTURE.

VOL. II.

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SECOND VOLUME.

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ELLIS'S HUSBANDRY.

BOOK XV.

Of the CULTURE *of* SAINFOINE,
TREFOIL, RAY-GRASS, &c.

SAINFOINE certainly is improved by sowing its seed in dry, light lands; but it is mostly propagated in chalks: I have seen it more on the latter, than ever I did in the former; and if the gravels are much loamed, it oftentimes misses, as I have reason to complain of; for this seed will not grow in clays, loams, rich, nor wet earth; by reason (if it does take) its

VOL. II. B spungy,

2 CULTURE OF SAINFOINE, Book XV.

spungy, deep roots will fugg, rot, and die here in a few years; for it requires a dry soil, both at top, sides, and bottom of its roots.

It is said this does not want much manuring, if any at all, and that should be only marle or chalk, but I will appeal to all practitioners in this grafs, if it does not want manuring, even necessarily every sixth year at least, which is as often as we dress our wheat land; otherwise, I am sure the twitch grafs will get up, and the sainfoine decrease in its crops; therefore we generally at that time sow twenty or twenty-five bushels of *London* foot over an acre of it at *Candlemas*, as thin as we well can out of a feed-cot. This is such natural manure for it, that in all sainfoine grounds about us (and they are many) they make use of no other sort, and yet we live in the chalky country, therefore whoever makes use of chalk for a dressing, I think, is under the last shift: Besides, I have known an attempt made to improve natural grafs with chalk, but the project soon dropt, because they spread like a pan-cake, become a sort of plaister, and bind in the grafs, and indeed at best our common chalk is but a poor, hungry body; yet is useful in clays, gravels, and loams, when it is ploughed in, and incorporated with them,

as

Chap. I. TREFOIL, RAY-GRASS, &c. 3

as I have amply made appear in the chapter of chalks.

As to marls, I never saw their effects this way, but it is obvious to many, that this is a most unctuous, fertilizing earth, and consequently may administer an improvement to the lean ground, wherein the sainfoine grows, if it can be conveniently had; and undoubtedly there are many places in *England*, where this can be got, and not the foot: By the same rule, for necessity's sake, parings of turf, or shovelings of highways may be mixed with lime and chalk, and let lain two or three years, till they are rotted and brought into a powdered condition, which may do some good on sainfoine, as well as wood, or coal-ashes.

That sainfoine will grow in clays, as to say, that in case a chalky bottom has a top *stratum* of clay, about four or six inches deep, lying next under a surface of mould or loam, three or four inches thick; I say, here sainfoine may grow and prosper for several years together, because this grass, like *lucerne*, has longer roots than others, which are of such a length, that they will in the second year (if not the first) of its growth reach the chalk, and then they are out of danger of being damaged by the clay; for such a *stratum* of clay I will suppose to lie drier, than where the whole bottom earth is an intire

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clay; and therefore the wetness or moisture of such a *stratum* of clay cannot much hurt the sainfoine roots, as I have experienced in a field that I at this time rent of our parson, which consists of this very soil, at least one part of this inclosed field is of it, and wherein I have sowed sainfoine-feed, to good purpose. But to assert, without any exception, that a clayey soil is proper to sow sainfoine feed in, may chance to lead those into a great mistake and loss.

But as I have shewn what will preserve and further the profitable growth of sainfoine, I will now give an example of two crops I knew ruined by dint of ignorance, and one and the same sort of mismanagement. One crop grew about two miles off me, the other within half a mile; and sown by men of years, under great repute for their knowledge and practice in farming after the downright common way: These two men I was acquainted with, who seemed so opinionated in the matter (as commonly the old staunch ones are) that I believe they had no mistrust of a miscarriage; but sure enough it happened; for the sainfoine took extraordinary well on a chalky, loamy ground; and in order to enjoy the more this good beginning, they footed it the very second year, which so enraged the growth of twitch-grass and other weeds, that they got the start of the sainfoine and
killed

Chap. I. TREFOIL, RAY-GRASS, &c. 5

killed it; because it was then in its meer infancy, and had not time allowed it, to make a sufficient strong root in the ground, whereby it would have been enabled to have got the dominion of all the weeds, and killed them as they did this: Wherefore this great loss of both these fine crops, ought to stand recorded as a warning to others, to avoid the like misfortune; and never foot their sainfoine till the third or fourth year.

In the first and second year it comes up singly, and not spreading, and is thereby so soon destroyed by the couching twitch-grass; but in the third and fourth year, it spreads rather beyond poppy, and produces (as has been observed) sixteen branches from one stalk, that is so strong, and covers the ground so much, as kills the twitch, which is the reason, that the foot must not be put on till the sainfoine has obtained this strength.

Sainfoine hay is so nourishing, that draught horses may work under it alone, and will also keep them in good case without any other feed. It is also a sure crop, even in the driest seasons, and when natural grass is burnt up, this will be a vast burthen, and yield sometimes three loads on an acre, which we commonly sell for twenty-five shillings a load out of the field.

I have here further to add, that when we sow sainfoine seed among barley or oats, we

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never sow this great seed by only rolling it in : No, this is too big a seed to be covered by merely rolling it in ; therefore we always harrow it in, when sown in the random or broad-cast way, and yet roll the grain, and this some time afterwards, when the barley or oats are high enough for the purpose.

Ray-grass, as well as some others, has its good and bad properties. Its good ones are, that it comes the soonest of any grass in the spring ; and thereby gives the farmer an opportunity to improve his milch and other beasts, before other grasses are ready ; so that by the time this is done, the clover and trefoil will be fit to turn into, which indeed is a very useful article, and, I think, is the best belonging to it.

It is also of great service for its hardy nature, in growing on rough tilths, and in poor, gravelly grounds, that will bear little else, and because it will last many years.

Its ill properties are after the first crop is mown off, it grows but little the rest of the year, which brings this and the trefoil under great disesteem.

That if it is sowed with clover, as it is often done to preserve the sheep and cows from hoving, and for its early bite ; this will in three years time get the better of the clover, and so almost
become

Chap. I. TREFOIL, RAY-GRASS, &c. 7

become an entire crop of itself; but then it generally grows too thin for profit: Also at best it is but a very coarse grass, which makes a person say, it is next to a kex for that quality.

This is a grass that sours the ground above all others, by the thready entanglements of its root with the upper earth, which it greatly impoverishes by its shallow growth.

For which reason it is utterly a wrong grass to lay down ground with, and converting it into meadow land, because of its voracious nature, and mixing itself for many years with the natural grass, that it much spoils by hindring its sale.

It is best sown on a fine tilth in *March* or *April*; if with clover, one bushel harrowed in is enough on one acre; but if it is to stand for an entire crop, then two bushels is the least that can be sown.

Nonfuch trefoil is a very fattening hay for all sorts of cattle, and so is its grass; and in particular very serviceable to cows and ewes in producing a great deal of sweet, yellowish milk and butter; for which good qualities it is by some called *Nonfuch*: But after *Midsummer*, or the first crop is off, it grows very slow, and makes but a small return, and is apt, when grown old, to make the butter bitterish. This

8 CULTURE OF SAINFOINE, Book XV.

trefoil has likewise a singular quality different from all others ; for if you mow it and plough the same ground several times, and sow it with corn, it very rarely happens, that you miss of having a thicker crop the summer following, than when you first sowed the trefoil-feed ; but, if you plough only once before you sow the grain, it is a great chance if you don't intirely destroy it. Folding sheep after the ground is ploughed will likewise prevent the regrowth of the trefoil, as well as only one ploughing : And, if this is not so served, it is very apt to spoil the succeeding crop of wheat by its luxuriant growth, especially where there is a good tilth made, and the ground well dunged. And here I must praise our *Hertfordshire* farmer for his discreet sowing of this seed in its black hull, as well as discommend the common method of sowing it naked ; for experience shews that the outward coat or hull secures it very much against the rigour of frosts, wets, winds, and slugs, inas-much as it will withstand a whole winter's and summer's revolution of weather under several ploughings, and yet remain unhurt. In the common way, trefoil-grass lasts but two years, hollows ground much, and will shoot two or three times in a wet summer ; but in a dry one, little more than one full crop. It will grow on a rough tilth, and not hurt the oats which it is sowed

Chap. I. TREFOIL, RAY-GRASS, &c. 9

sowed amongst; because the ground not being manured for this grain, prevents the trefoil from doing the mischief.

It is said that all seeds should be well cleaned from their husks before they are sown, without making any exception. This I can easily prove to be a gross error; for it is so well known, that this seed is best sown in its husk or hull, that it is a general practice throughout *Hertfordshire*, to sow it in its black shell or cover; because by this means it will admit of harrowing in, and thereby be better mixed with the earth, and more secured from frosts and the burstings of hasty showers, that the naked seed is liable to, and sometimes becomes spoiled when sowed on the top, and only rolled in; and if it is harrowed in, the tynes are apt to bury great part of this small seed; for I have sown it both ways; therefore when we sow our barley or oats, we sow one bushel of this seed, that generally costs two or three shillings, over an acre of land, immediately after the corn is sowed and harrowed in; and then give this grass seed one harrowing, and it is done with; for we never roll it, till the clover is sown by only rolling in, a fortnight after, on the same ground: These grow together extremely well, because the trefoil is a sort of antidote to the clover, and in a great measure prevents its fatal quality of hoving cows and
sheep;

10 CULTURE OF SAINFOINE, Book.XV.

sheep; and also for their agreeable benefits to each other in making of hay, and feeding cattle; the trefoil being a branching, fibrous sort of grass, entangles itself with the clover, and prevents very much the loss of its valuable leaves; which when made alone, it generally loses great part of, both in field and rack; besides, it helps to shade the roots of the clover, and becomes together a more fatning, substantial food, than when sowed alone; and the more, for that the trefoil, after the first head is cut or mowed off, will not rally again, as our countrymen call it, like clover; but like ray-grass, affords but a poor bite after that time; when the clover makes a quick shoot, and will get a large second head.

It will grow in any ground, and like the sainfoine, is one of their best friends in chalks, dry gravels, and sands, where clover will not thrive.

It is said this will not hinder the growth of corn, which I think is more than can be proved; for the root of trefoil is a fibrous bunch, that spreads itself in the compass of a crown piece, about two inches in length, close to the surface, where it draws its nourishment from the top, and best earth; and therefore is by some called an impoverisher, and somewhat a sourer of the ground, as the ray-grass, and all the shallow,
stringy

Chap. I. TREFOIL, RAY-GRASS, &c. 11

stringy sorts are: This I am sensible is a new character of it, but I wish there is not too much truth in it; for I have observed some of our farmers, that have sowed it amongst their oats, on a stiffish, loamy, moist soil, for feeding their horses, or sheep, till about *Midsummer*, when they have ploughed it twice before they sowed it with wheat; and as it appeared to me, the grain complained, by the thinness of the crop.

I must own, my opinion is, that it is not capable of doing much harm the first summer, amongst the corn it is sown with; because the roots are small and young, and that little it does, it makes amends for, by shading the root of the corn in a dry time.

But I have known it ruin a crop of wheat that was well dressed, and flourished greatly for a little while, in the spring, till the trefoil got master and choaked it: The occasion was this; a piece of trefoil was mown for seed, which as it sheds the soonest and easiest of any, there was so much remained on the ground that feeded it all over the next year among the wheat. Now, the oftener the land is ploughed, the greater power it gives the seed to do this mischief; therefore such ground should have only one ploughing, and the wheat harrowed in; this effectually buries it, and totally hinders it ever coming again. As to its being ploughed in for manure,

I am

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I am not an advocate, for the benefits it produces this way (unless there is no other sort can be had), because its stalks and roots are not of that substance as clover is, that I think far more proper for this purpose ; yet it is called only half a dressing, and *French* wheat a whole one.

If the trefoil is sown alone with the barley or oats, for an entire crop, then we sow two bushels of it on an acre in the manner before directed : and if clover is sown with trefoil, then six or eight pounds is the general quantity on a fine tilth.

Lady finger grass, is a true natural sort, that grows in my upland-meadows, on a loamy surface, of about twelve inches deep, under which is a red clay of ten feet depth, and under that a chalk, and is justly esteemed the best of grass. Its blossom is a yellow flower, and blows in this or next month, much like that of a furz or whin, comes up with three leaves with trefoil, carries three branches on each stalk, grows about eighteen inches high, and when ripe, is loaded with many small kidds, with certain numbers of little feeds near as big as a lentil, and therefore is both hay and corn ; and, being the sweetest of grass, the cattle eat it very greedily, which makes it in the highest perfection, the most proper hay for feeding saddle-horses, deer, sheep, and rabbits, in the
winter.

Chap. I. TREFOIL, RAY-GRASS, &c. 13

winter-seasons, because they will not only eat it with pleasure, but it warms, dries, strengthens, and fats them sooner than all others. Wherefore, I recommend this particular vegetable to the notice and enquiry of the virtuoso's of the age; and, where ability accompanies an improving genius, this hitherto neglected grass may be obtained, by having its seed gathered clear of all other feeds, and sowed entire in moist or dry loams or gravels, and even in moorish grounds; and, if it take well, there is no doubt, but that it will, in a ten-fold manner, compensate the extraordinary charge that must attend its gathering.

B O O K XVI.

MISCELLANEOUS OBSERVATIONS ON THE CONDUCT OF ARABLE LAND.

C H A P. I.

OF THE PROFIT OF FARMING DIFFERENT SOILS.

I HAVE thought it most necessary, as well as previous to the following book, to begin with an explanation of the very best part of husbandry, which I think is justly included in the several terms of the nature, culture, melioration, and improvements of soils; as therein lying the chief foundation of after-success, in the growth of corn, grass and trees: And from this œconomy does many branches of this most useful part of agriculture proceed.

I shall therefore particularly illustrate the benefits, as well as expose the sad effects that arise

Chap. I. PROFIT OF FARMING, &c. 15

arise from their good or bad management. The chiltern, or hilly country especially, is more than ordinarily concerned in these subjects, by reason it is mostly enclosed, and consists in diversity of soils, of clays, loams, sands, chalk, stony ground, hurlucky and gravelly grounds, and several other sorts, that abound more or less with parts of these earths. While the fertile vale or low country runs chiefly but in little other than the black loams or blueish marly clays in open fields, that are commonly under one and the same management of culture; and is easier by far brought into a tilth or condition for corn, than this of ours, and with a great deal of less charge and trouble; for there, they are often afraid of being too fine, especially for their beans, while we here are in as much concern of fearing the corn is bound in by the hard tenacious nature of our earth: That will not shatter nor crumble by a little frost, or working as that in the vale will; where they are generally strangers to a very stone, while we in the upper grounds, in many places, are forced to plough amongst but little else. It is therefore computed, that five pounds will go as far in a smith's bill in the vale, as fifteen will in the chiltern, and it is in this latter that the ploughed ground lets for more, even for twenty shillings an acre, when the best of theirs but for nine. The vale also

16 PROFIT OF FARMING, &c. Book XVI.

is free from the exorbitant charge of chalking the ground, or dressing it with foot, coney-clipping, horn-shavings, rags, hoofs-hair and ashes, which are yearly bought by many of the chiltern farmers; so that I have known some of the occupiers of gravelly soils, say, they must lay out the value of an indifferent crop in dressing, before they can get a full one into the barn. When they in the vale do all with their fold, and dungs that are made from their own cattle and fowls. And therefore as the rents and charges in the chiltern far exceed those of the vale, it has been made a necessitous study, how to manage these enclosed high grounds, so as to make them answer their racked rents and extraordinary charges: This has produced several new improvements by turnips, foreign grasses; as also the various kinds of dressings utterly unknown, at least unpractised by our fore-fathers, and the present vale farmers. Yet still are not these great beneficial alterations adhered to, and made use of by many in the chiltern at this day; who are so byassed by their ancestors methods (as I have already more amply observed) as not to admit of new rationales, though of ever so great importance, and this is so very common, that many will justify (or at least endeavour it) the third year's ground laying fallow, which indeed is putting the enclosure almost

almost on the same footing with an open vale field, but this obstinate absurdity brings them under less profit, than those that husband their ground otherways.

C H A P. II.

OF PLOUGHING.

THE farmers of *Kent* pretend to be greater masters of the art of husbandry, than any others; and this, especially, for ploughing, and hoeing, which I shall examine. In this county, there was formerly hardly any other plough made use of than the turnwrist-plough; one sort of which was worked without wheels, and the other, with two wheels. The two-wheel turnwrist-plough is made to plough either hilly or level grounds; and I must own with assurance, that no plough is so properly made, to plough those grounds, that lie on the sides of hills, as this turnwrist-plough, because by the help of its shifting the turnwrist piece of wood, they can turn every furrow down hill, if they find it answer their profit: And it many times does answer their profit, because, by so doing, there is no partition-furrow, or vacant ground left; but all the whole land, when thus ploughed, will lie in even furrows; whereby the corn, or

grafs, turnips, or other vegetable, that may be fown here, will grow in an intire even crop; which is what cannot be faid to be, where ground is ploughed in broad-lands, or what is commonly called, round-work; as we for the moft part do in *Hertfordfbire*, and as they do who live in vales: We, with our two-wheel fingle broad-board-plough, and they with their foot-plough, which caufes a broad-land; confifting generally of four or five fwarths, each fwarth four or five feet in breadth, to lie ploughed two different ways, half the furrows one way, and half the other; and then there always remains a vacant place in the middle of the broad-land, that feldom bears fo much corn as the other part of the ground; becaufe this open thorough, or piece of land, of the breadth of two common furrows, as its furface is turned from off it both ways, is the barreneft part of the whole field; and the larger the field is, the more barren naked thoroughs there are, that confequently yield lefs grain, and the more weeds. Now this barren misfortune of having grain growing in vacant thoroughs, or partitions of broad-lands, is by this turnwrift-plough, intirely prevented; and not only prevented, but by ploughing down land on the fide of hills, its work is made much eafier to the horfes, and more ground may be ploughed in a day, than when

Chap. II. OF PLOUGHING. 19

when it is ploughed in broad-lands: Not that the turnwrist-plough is wholly confined to the ploughing of land all one way; it will also plough broad-lands, by working it without shifting its piece of wood, that serves instead of a broad-board. So that this two-wheel turnwrist-plough will do more variety of work, than our *Hertfordshire* two-wheel plough can; and it is certainly the best sort of plough in *England*, for ploughing the side of hills, and level dry grounds; provided it is made light, which few are: For I have seen several of them, whose two wooden wheels were so shod with iron-tyre, that they seemed to be as heavy, and as big, as any two fore-wheels of a coach I ever saw; and when it is thus made, it may be said to be the heaviest single-plough now in use. But I have also seen as light a two-wheel turnwrist-plough, as ever I did a two wheel *Hertfordshire* plough; and as the ploughman was then at work with it in a large, level, dry, loamy field, containing, I believe, about twenty acres, I asked him leave to let me hold it a little way; which I did, and found it worked easy, without making so much as one vacant furrow throughout this great field; consequently then, all corn that is sown in such dry grounds, whether they lie level, or side-long, must grow truer and better than when it is sown in broad-lands. The objection against

the use of this two-wheel turnwrist-plough is, that all land which lies obnoxious to be damaged by rains, is unfit to be ploughed with this plough, because it leaves no water-thoroughs. It is for this reason therefore, and also for that the two wheel turnwrist-plough is generally made so heavy, that it is of late, in some parts of this county, much in disuse; and another lighter, much lighter one, introduced in its room; and that is, the two-boarded swing-plough, that has no wheels, and yet answers their purpose extreme well, in all level, dry, and even in some moist, loamy grounds, where this plough may be drawn with much more ease to the horses, than the two-wheel turnwrist-plough can; for by the use of this plough three horses can do as much work, and as well, as four can in drawing the two-wheel turnwrist-plough: And therefore this turnwrist-plough is every year, in some parts of the county or other, supplanted by this swing-plough, and that with a great deal of applause; except it be where, as I said, the sides of hills are to be ploughed; for here no plough whatsoever can perform its work so well as the two-wheel turnwrist-plough. There is another sort of turnwrist-plough, that goes with a chissel-point, and works in wet grounds instead of a foot-plough; but I cannot commend its use, because the swing-plough will discharge such
work

work much better. But though these farmers have lately introduced the swing-plough into their county, and have received a benefit by it, ever since they have put it into common practice, yet they are still short of being completely furnished with the most serviceable plough of all others, because they have not the late patent-plough among them; which is the lightest of all ploughs, and yet so strongly made, as to employ two, three, or four horses in dry and moist grounds: For this excellent plough has no wheels, and but a very slight socket-share, that weighs hardly more than six pounds; will turn a furrow better than any other plough now used in *England*; will work clearer of dirt; and may be made to do more work in one day, with fewer horses, than any other plough whatsoever. From which I infer, and I have too frankly owned it, that these farmers, considering how dextrously, and better than all others, they plough the sides of hills with their two-wheel turnwrist-plough, are better husbandmen on that account, than we *Hertfordshire* farmers are. But, take away from them that particular way of ploughing, the *Hertfordshire* farmers, I think, go beyond them, and all others, for ploughing their ground clean, and bringing it into a fine sweet tilth, as soon as, if not sooner than, any other farmers in *England*.

C H A P. III.

OF HORSE HOEING.

I Shall examine in *Kent* what they call breaking or hoeing of corn: this most ingenious and most profitable work is partly owing to their inventions; for I cannot say it is all: because the late Mr. *Jethro Tull*, that learned and experienced practioner in the art of the drill husbandry, was the founder of this contrivance, when he published the use of his hoe-plough; which would well answer the end it was made for, provided it was worked in a very fine tilth-earth, by a skilful, careful ploughman; but if it was worked in a rough earth, it would be apt to lay some of it so near the stalks of the tender plants, as to bruise and damage them, &c. Upon which consideration some persons (I think it was in this country) studied the making of two or three sorts of different horse hoeing instruments, which they called horse breaks, because they were drawn by a horse or two, that served to hoe the interval earth between rows or drills of peas, and horse-beans, &c. to their great satisfaction and profit; because they loosened or broke the ground, cleared it of weeds, and laid the earth on the roots of the peas or beans, in a most regular and admirable manner; whereby, with only two such operations

operations in one season, they will break their peas and beans (as they call it) to their great advantage.

And, what is very ingenious in these inventors or improvers, they have made three sorts of these breaks, or horse-hoes, each one to be worked according to the nature of the soil, and the time breaking; and this, one of them will do exceeding well, and discharge a great deal of work of hoeing in one day, by taking the drill-plough from off its two wheel carriage, and fixing this horse-break to it in its room, which they will do very dexterously in a quarter of an hour: so that this same two-wheel carriage serves two uses, one to draw and work the drill-plough, and at another time to draw and work this horse-break; and they will so work it in a light earth, with only one or two horses at most, as to break or hoe three acres of peas in one day, in such perfection, that the ground will lie in a most exquisite clean condition, as I have been an eye-witness of, without suffering so much as a weed to be seen in the month of *May*, when weeds are then most predominant: and this they do every year so excellently well, that no *Chiltern* farmer, who does not horse-break their peas and beans, can get crops of these grains so cheap, so early, and in so plentiful a manner, as these do.

But the horse-break extends its great usefulness into several other branches of profitable husbandry, besides breaking of interval earth, and hoeing it up for the peas or beans, whereby it brings them under a forward ripeness, and a most plentiful bearing; for, by so doing, the farmer enjoys an opportunity of getting this pea or bean-crop off so soon, that a crop of turnips or rapes may be immediately sown on only one ploughing up of the same ground; and, when these are eaten off, a crop of wheat or barley may be set on, and made to succeed the turnip or rape crop; which I do aver, for truth, to be one of the greatest improvements in the art of agriculture. And for these reasons it is, that all gentlemen and corn farmers that hold and occupy arable lands, which are of a proper nature, and lie convenient to be hoed by an horse-break, should with all expedition be provided with two sorts of them at least. But if their ground is not proper for the drill-plough, it may be for the use of an horse-break; and when it is so, this horse-break, where any sort of two-wheel plough is in common use, may be fastened to the carriage of it, and worked in the same manner, as if it was fastened to the carriage of a drill-plough.

And this horse-break tenants in particular are under an obligation of having, because while those
farmers,

farmers, who employ one or more of these horse-breaks, get full crops of peas or beans, they that keep none, very likely, nay, it is more than probable, will, in some unfortunate seasons, lose great part of their crops: and then where is their meat to feed their horses, cows, sheep, hogs, and poultry, the whole year? and above all, how must the money be raised to pay our landlord his rent, and maintain a family? And now, as I am here writing to ingenious gentlemen and farmers, that understand the practical part of husbandry, as well as to those who are ignorant of it, I would ask the former, if they have not seen crops of peas, so damaged by the slug and fly, that half or more of them have been lost in some unkind seasons: I mean those crops, whose seed were sown, and grow in the promiscuous random-way; and also whether they have not known crops of field-peas, in some dry summers, so dried that they have missed corning, been blighted and spoiled.

The same of horse-bean crops, that in dry seasons have been so stinted in their growth, as to yield hardly half the quantity of a full crop; or that they have been otherwise checked in their growth, by the black dolphin fly; or crippled in their growth, by the multiplicity of the curlock, and thistle-weeds. Now, some or all of these misfortunes, I maintain for truth, may be prevented

prevented by the service that a right sort of horse-break instruments will do, if employed by a skilful, careful hand, at a right time of year; which I propose to make appear, by the following reasons: first, as a horse-break must be drawn twice at least through the intervals of drilled peas, or beans, in a different shape each time, it will loosen the surface of the earth to such a proper depth, as to displace or kill many slugs and worms, whose residence in *April* and *May*, is in the uppermost part of it, as lying here in the most convenient and proper manner for their readier advancing to, and retreating from their tender, young, sweet, green food. Secondly, as the slug does his mischief in the night, the fly does his in the day-time; and at night they retire to rest near the roots of the peas, and on their contiguous ground: then, when a horse-break is worked very early in a morning, it may prove the destruction of many of those insects, or oblige them to quit their habitations, for removing to retired places, where they may carry on their rapine with less disturbance. Thirdly, as to the destroying of the dolphin fly from off the bean-stalks; this insect is very much exposed to it, by the beans being sown in drills, at eighteen, twenty, or twenty-four inches distance; because as such an interval of ground gives a person room to walk between the rows, he may with

with a short sithe mow, or cut off with a knife, the heads or tops of the bean-stalks, and thus save the destruction of whole crops; for these insects always begin to multiply at the top of the bean-stalk; and, if once thrown down, they never rise again.

CHAP. IV.

OF SOWING.

IT is mine and other farmers sentiments, most of our failings in this respect is owing to our too thin sowing; for as an old quaker farmer said—I have lost a deal in my time by sowing thin, but I never yet suffered by sowing thick—yet it is certain they are both extremes, and have been the cause of great losses in crops: wherefore I will endeavour to shew the particular misfortune of both faults.

First then, by sowing thin, there is room given to the weed to take its rise, and make its progress among the grain, without interruption either of its root or branch: now all are sensible that a weed out-runs the corn; because one has its production naturally from the earth, while the other is brought forward in some measure by the help of art; and therefore has not wholly that advantage in the ground as the weed has, which is the occasion, why all trees as well as weeds

weeds thrive fastest where they have a spontaneous growth: it is for this reason that wheat and other grain is sowed directly on a fine tilth, where the weed is at that time checked or killed; that it may get the start of the lateral growth, by which it is enabled to keep back, choak, and vanquish the weeds breeding and running up. It is also for this very reason, that a right farmer will not sow his clover-seed amongst his barley, till a fortnight or three weeks afterwards, that the grain may have an opportunity of getting dominion over the grass; from this thin sowing often ariseth that grand misfortune of the wild oat and most other weeds, that generally attack the vacant interspaces of the grain, and become almost sometimes a total destruction to a whole field of corn; especially on ground newly broke up, that before had been a lay of grass or wood; which by a thick sowing of the grain are mostly hindered, for the ground can but carry its burthen; and if it has it not in corn, it will in weeds, which I think is a plain demonstration, that thick sowing is the lesser fault, although I am sensible of the main objection to this argument; which is that by sowing thin, the ear will be the bigger; and so it had need, considering the ground and dressing each distant stalk takes up; but this is attended with smaller kernels, and the great risque of being choaked by weeds, and more subject to blights and

and blasts; besides, when the corn grows thin, it has not the opportunity of being so soon and so well ripened, as if thicker; because the ears are apt to bow and hang down, that the sun cannot come to all their parts; and then they are more exposed to the violence of winds and rains, that often more easily bend down their stalks and ears.

By consequence then, thick sowing must have the advantage of the two extremes; because it greatly prevents the growth of those weeds, whose mischiefs seldom are over at the barn; but too often are known to insinuate themselves into a growth in the field, notwithstanding the dung-hill has been more than once turned: at first, by thus sowing the corn thick, one stalk becomes a support to another, and so the better withstands the furious winds and rains: Secondly, hereby the ear of the grain is kept upright, and more exposed to the sun and air's fruitful influences, that ripen it sooner and kinder, by having access to all its parts: Thirdly, the growth of weeds is often absolutely hindered, by the plenary furniture that the ground enjoys from the roots of the grain: Fourthly, the ear that grows clear of weeds, and has a full upright growth to the last, has generally a bigger kernel than the thin sowed one has. And now I am come to the main objection than can be offered against this practice,
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and that is, that by the greater quantity of seed that is sown, the crop becomes hopper, small ear'd, and will not yield like the large one, that has more room for its growth.

Now to these pro's and con's I answer, that as no extreme can be good, it is the farmer's business to fall in with a mediocrity, neither too thick nor too thin, for then he must be right, as to the check of the weed, and growth of the corn; and therefore I shall here set down the quantity of seed that we generally sow.

Wheat sown in tilths, are by all the judicious esteemed in the *Chiltern*, at two bushels and a half on an acre; but even here is a difference, for two bushels and a peck at the beginning of *September*, is equal to two bushels and a half a month after, for the later the spring the more should be the seed; because it's more apt to die by the cold and wets, than the more forward sowed, that presently, by the clemency of the weather, gets up to so great a head, as to cover the ground, to the keeping down the growth of weeds, and is also sometimes much devoured by the rooks, crows, and other fowls. Then there is another difference in the soils; particularly in the gravelly ones, which are called dying ground, from the many small stones that they abound with: in this, numbers of the grains

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are hindered coming out: also by its binding quality, so made by heavy lands falling presently, after sowing; and by the poverty that usually affects this earth: for all which, there is often an allowance made by sowing more seed here, than on the rich loose loams, where sometimes two bushels and a peck is equal to two bushels and three pecks on a gravel; but in case the loams are very wet at the time of sowing, then there must be the more seed allowed, because some part of it will be smothered and not able to come out of the ground. Likewise in new broke up grounds, there must be at least two bushels and three pecks, or three bushels sowed on an acre to prevent the wild-oat, and allow for the worms and birds eating it; but in such earth, a crop of oats is commonly first sown to tame its over luxuriancy, and prepare it the next year for sowing wheat. And indeed, in all ground where wheat is only harrowed in on broad land, there must the more seed be sown for the reasons before mentioned.

In the vale they commonly adjust their quantity on an acre to two bushels and a peck, as being full enough for their rich ground, that naturally causes it to gather and bunch beyond our *Chiltern* land; for here they are free from the cover of stones, and more than we from the hazard of bashing-binding rains, so that they never
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much fear their corn's coming out of their clean, loose, hollow earth, which they venture first to sow all over with seed, and then plough it in: now this is what we dare not do in our high harder grounds, lest we bury it and lose our crops; for with us a man follows the plough, and strains in the wheat in four thorough-fitches that the plough first makes, and then covers again: but if we sow it on broad-lands, then we commonly only harrow the ground all over once in a place, to prevent the wheat's lodging in the thoroughgs, and immediately harrow it in twice in a place, backwards and forwards.

C H A P. V.

OF HARVEST.

OUR way is, to begin reaping at five of the clock in the morning, if it does not rain much; for we are so far from being afraid to reap because of the dew, as they are in *Cheeshire* and *Lancashire*, that a very small rain does not hinder us. Here, we chuse to make our bands in a dewy morning, because the straw is then in a moist tough condition, and much fitter, and surer to bind up wheat in, than when it is dry; for that then it is brittle, will work short, and be apt to break in the twisting of it: Here we commonly

monly compose our shocks of wheat with fifteen sheaves, six of each side, one at the end, and two at the top, if occasion be ; but we seldom cap with the two top-end sheaves, unless rains are apprehended to fall quickly : and on this account it is, that I think we *Hertfordshire* farmers are in the wrong of it, for so doing, because if rains fall in hasty showers, and continue, it is not these two sheaves that can keep thirteen others dry long ; and therefore it is my opinion, that he who composes his shocks of no more than ten or twelve sheaves, is much more in the right of it than we are : but an old custom is so prevalent, in most places of the country, that it is almost an insuperable task for any to reason them out of it ; else the *Welch* way of making shocks of wheat would be more in fashion than it is, as I am going to shew.

If we engage the harvestmen by the month, our common wages at *Gaddeſden*, twenty-eight miles from *London*, is thirty-five shillings and their board ; or, if they be neighbours and board themselves, then three pounds is allowed them, on this condition, that in case a wet time happens, and no work can be done abroad, they thrash, cut wood smaller than it is, for fuel, or do any other business within doors, that is customary for them to do ; and, for this purpose, those wary farmers, whose conveniency allows it, will

provide such work ready, as may answer the occasion. Now, the number of servants and month's-men, sufficient to reap, mow, and inn our harvest, is computed by the number of acres of wheat; that is to say, where a farmer, whose farm is composed of arable land, has thirty acres of wheat, barley, oats, pease, &c. in proportion, he will want six men at least, reckoning one man to every five acres of wheat. But, besides our help from servants and month's-men, we oftentimes let out some parcels of wheat to reap by the acre, and barley and oats to mow, &c.

The cheapest way of victualling harvest-men is also an important article; for as good economy ought to be the study and practice of all good husbandmen, it ought to be so in a more than ordinary manner acted by the farmer, who is liable to the most charges and the most enemies of any artificer, and particularly at this time. Here then he has an opportunity of displaying his talents of skill and care, in having ready his strong stish beer, and a *June* brewed mild ale, which being drank in a mixture, goes a great deal farther than altogether mild ale, by quenching thirst the better, reaching their heart sooner, and keeping them in health surer. The next thing that is necessary to have in readiness at this time is pickle-pork, which I will suppose, was salted

down in *December*, or in some of the three following months; this is mighty useful to eat with lean beef, and commonly together becomes an acceptable hearty dish; with a plumb pudding: At another time a piece of fat bacon and lean beef, with a pudding, is dressed; and made agreeable to all palates, and the more when turnips, carrots, or cabbage are added: but a plumb pudding the first fortnight, and a plain one after is our constant custom in *Hertfordshire*. When a *Chiltern* farmer rents a hundred or more pounds a year, it is the practice of some to kill an old cow, bull, or bull-stag, that has been fatting in clover, &c. some time before, and, if it is too much for himself, he sells the rest to a neighbouring farmer; or, to kill a few fatted old ewes. For my part, I not only fatted and killed mutton into my house, in the harvest, 1741, but also a very good barrow-hog, that I fed till it weighed about thirty*stone, and killed so late as *July*, without fearing it would not take salt in hot weather; for it took so well, that the very last piece proved intirely sweet, and did me a great service in lessening my expences at the butcher's shop, where beef at this time commonly sells for the greatest price. And, that our harvestmen may go on with a light heart, and a nimble pair of hands, we allow to each, besides small beer at will, a quart of strong drink

every day; and, when they unload corn, we generally double or treble that quantity. To which I add, that as cheefe is a most convenient and pleasant food to the harvest-men in the field, between dinner and supper time, it concerns every farmer to provide it at the best hand in due time; accordingly we ride to *Sturbitch* or to *Baldock* fair, and there buy it in the cheapest manner. But, to be compleat in this article, there should be never wanting the excellent old *Cheeshire*, besides either *Gloucester*, or *Warwick*, or *Somersetshire*, cheefe, that every man may use which he likes best; and, for breakfast, our usual way is to send a milk-poffet or plain milk well breaded in a tin kettle, or large pitcher, to the field, and repeat the same at supper, unless there be offal meat left, which our maid generally hashes and minces up; or, instead thereof, gets ready a good parcel of wiggs or cakes, that, when sopped in ale, gives the men a satisfactory repast. But I knew a quaker farmer, who managed his matters so cheap, as to buy but only one lot of beef, weighing six stone, during his whole harvest in 1740, because he supplied the place of beef with several fat ewes that he killed in that time, which with his pickled pork and bacon, &c. answered his purpose; and yet he was not one of the least farmers, for he commonly employed six month's-men every harvest, besides his own yearly domestic servants,

servants, which were four in number; and, for this purpose, he always before this year, used to buy a quarter of beef into his house every week throughout the harvest, till he got into this way of fattening and killing his own sheep and hogs. Another fed his harvest-men with fat bacon most part of the harvest, with some beef between, and sometimes fat bacon and lean beef together, with pudding. There are several other inventions made use of by our country dames, for refreshing and pleasing harvest-men, with variety of cheap dishes.

In *Kent*, they are more perfect in the exercise of the scythe and cradle, than any other county is, for that they use it more than any other: and this they are necessitated to do, as they are resolutely bent to bind up all the barley, and oats, and beans, they possibly can, in sheaves, for the great conveniency they thereby enjoy, in drying their corn, securing it from rain, loading and unloading it with ease and expedition, and threshing it out sooner, than the barley, oats, and beans, which are carried into the barn in the promiscuous and loose way: therefore on this account, they certainly exceed all other husbandmen in *England*, and indeed with good reason, for that they have left off an old erroneous custom of mowing corn with the bare scythe, for practising a newer and much better; and which they could not do, in

the perfection they now carry it on, if they were not masters of the art of cradling corn; for, by mowing it with scythe and cradle, one man may mow two or three acres of barley, or oats, in a day, cut it perfectly clean, and lay it in true regular rows, as he mows it, ready for the raker : on which work these farmers are so intent, that they will cradle that barley, that oat, and that horse-bean crop, which we in *Hertfordshire*, and in most other counties in *England* refuse to do; and all because they will bind up all the corn they possibly can; for when a crop of barley, or oats stand bent, or is a little laid, or grows too thick and high, we refuse to mow it with scythe and cradle. But if these farmers refuse to do it, it is because it is very much laid and scraled indeed; and they are certainly, as I said, in the right of mowing it with scythe and cradle, where it can be done: and this work may be done, even where a crop of barley, oats, or beans, stands very thick and high, if a cradle of three strong wooden ribs is employed, when it cannot be so well done with a common four ribbed cradle, because a four-ribbed one is weaker, and will not enter the corn so quick and easy as a three ribbed one can. And when barley, oats, or horse-beans, are thus mowed with a scythe and cradle, the corn always lies one way free of any confused entanglement, which a random mowing of it always brings it under,

under, and renders it unfit to be bound up in sheaves, or small bundles, for threshing it the better, &c. As this practice then of mowing barley, oats, and beans, with a scythe and cradle, is attended with so much profit, all *Chiltern* farmers especially ought to come into it as soon as possible, for dispatching the most work in the least time, and giving the grain the best cure, both in field and barn, according to the example I have here published; and for these reasons it is, that all corn-farmers should be provided with two sorts of cradles; one with four ribs, and the other with three, that where the barley, or oats, or beans, stand, or lie convenient to be cut with one sort, they may be better done with the other.

B O O K X V I I .

O F W E E D S , & c .

Charlock.

THIS is one of the commonest weeds that grow among corn, turnips, &c. in fields, and of so hardy a nature, that where it is got to a plentiful head, it is very difficult to destroy it, because its seed has so much oil in it, as enables it to withstand one winter and summer fallowings. In wet warm seasons it is, like most others, most predominant; so that about the middle of *June*, it has provoked some to employ many hands to pull both the yellow and white sort up by their roots; you may give it to sheep, who will greedily eat their leaves and flowery heads. The yellow sort grows in most grounds, but the white, which is the most pernicious, chiefly infects the lighter lands, and is not near so common as the other. There has grown so much of the yellow sort in many fields of oats, which have so out-shot the
corn,

corn, as to oblige the owner to get their seedy tops mowed off, to prevent an after-damage from their seed, and to give the sun room to nourish the oats the better. Others have used the five foot long weed-hook, and six feet long pea-hook to strike off their heads, it being an endless piece of work to pull them with their heads, where these weeds are vastly thick. This seed, which very nearly resembles the turnip sort, and is like it both in leaf and flower, is undoubtedly propagated with turnip seed, that it often grows amongst, and therefore farmers should be truly nice in making use of clean seed, for a turnip crop. Charlock seldom grows among wheat, but much among barley, oats, pease, &c. where it does a great deal of harm, by its branching and choaking the corn, and drawing a considerable nourishment from the same earth, that should be expended in forwarding the growth of a large crop: It mostly flourishes in tilths and well dressed grounds, but does not affect stiff and watery soils: It is best killed, by making a summer-fallow of the land, and by sowing the same, the next summer after, with a crop of turnips.

On the twelfth day of *July*, 1738, I saw a field of barley over-run with the white sort, that is allowed to be more pernicious than the yellow charlock: It grew in a sandy loam, near

Darling

Darking in *Surry*, so thick, that the farmer despaired, and therefore did not attempt to weed it out. In our western parts of *Hertfordshire*, as we have hardly any of the sandy soil, we are not troubled with the white, but abundantly with the yellow. Now, as both the white and the yellow, as well as most other seeds of weeds, are ripe before the corn, you may the latter end of *July* or *August*, see them near ripe by their pods, that contain a seed much like that of turnips: Here then must be a fine parcel of it shed against another season, and so on, 'till it either costs the farmer, perhaps, five or ten shillings an acre weeding, every time the field is corn, and, at the same time, as much more damage may be done to his grain by the feet and cloaths of the weeders; or else he must suffer his crops, very likely, to be eat almost up by the charlock. But what is worst of all, this weed defies all care and pains totally to destroy it in our common sown corn, so that the farmer can only content himself with pulling some of it up by the hands in its youth, and giving it to sheep; or let the poor get it for a boiling herb; or it may be mown with a scythe, that will, if it is higher than the corn, cut its head off, and so prevent its feeding; or, when it is in flower, some strike off the heads with a long stick or wand; or by drawing them when
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in pod, after they have done drawing out the goodness of the ground in their green growth. In oats, pease, beans, and thatches, weeding of this weed, may be performed with a great deal less prejudice, than in wheat and barley, where it commonly is attended with considerable damage: However, when the charlock is pulled up in its ripe pods, the seed will sell for two shillings a bushel, and yield, by heat and expression, about half the quantity of oil, that rape or cole-seed will. Here also the drill-plough and horse-breaks extremely well answer, by curing and preventing the increase of this horrid weed.

Poppy.

It chiefly grows in white and gravelly grounds, but is often seen in loams, and some other earths. It is a very succulent weed, that draws the ground much, and robs it of those nutritious salts which should fertilize the roots of corn: It runs up in large green bunches, and therefore is best drawn by the hand, for the weed hook is not proper here: Its roots, stalks, and leaves make an excellent hay for tame rabbits, as being both of a healthy and fattening nature: Their flowers or red heads are also serviceable in making a salubrious syrup: It is mostly occasioned by too fine a tilth, and when the corn is sown in
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a dry season, which makes heavy ploughing, and a moist season its best prevention. But a certain farmer took a method that I never knew any other do, and that was, because he thought it too tedious a work to pull it up by the hand, he turned his hogs into his wheat, and they preferred the poppy stalks to those of the wheat.

Pull up the green poppy before, or when it is in its blooming red head, for it blooms the latter end of *July*. This will be a double service, First, by clearing the ground of this very succulent plant or weed, which draws much, and hurts the grain; next, by feeding the hog and tame rabbit with it. A sow will eat it well, and receive such an increase of milk by it, as to be able to bring up a litter of sucking pigs for the market, with a little other help. The tame rabbit will also thrive and nourish her young very fast, if given to her fresh every day; accordingly some make it into hay when it is in its green age, for feeding and fattening this sort of creatures, who greatly love it, and who will quickly get fat by it, with the help of some other proper alternate foods.

The red and white Dock.

This weed runs into the ground like a radish; as to the shape, depth, and bigness, it has a bunchy

bunchy tall head, that contains a great deal of seed, and does much mischief, where they are suffered to encrease, which is easily done, not only by their seed, but by letting any bits of their roots lie on the ploughed ground; where, though they have lain some months in a shrivelled condition, yet if they are mixed with the earth, they will grow again. Some say they are good for nothing; others, that they are very serviceable in diet-drinks for cutaneous distempers. In *June* and *July*, their large leaves and stalks afford a good handle to pull them up by. Some will draw them from among their corn, but then they sometimes do a great deal of harm; because the roots of the grain are apt to come up with them, therefore others will do this work in the fallow-seasons, by following the plough, and digging them up in the thoroughs it makes: Others, when a field is under clover, or any of the artificial grasses, will haul them out; but whenever they are weeded by pulling, it must be done when the ground is pretty wet and loose. About *Enfield*, they use a clever instrument for this purpose, having a wooden handle, let into a socket of iron, with two prongs of the same, fixed very near one another, and a small foot-iron, jetting out on one side their top, which being forced into the ground, very dexterously eradicates a dock at once.

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If it is a wet season you may, with the hand, by a gentle leisure haul, pull up, with all their roots, the red or white long dock, best, among oats, pease, beans, and thatches, which I take to be the best way of all others; because, if the earth is thoroughly soaked, it may be loose enough to get up the very last, fine, stringy part of this root. Or at the first stirree, which is often done in *May*, they may be gathered after the plough and harrows; a work that by no means should be neglected, because this weed is one of the hardiest and greatest of increasers, both by its seed and broken bits; for, if any of them are left but on the surface, they will strike root and grow, to the impoverishing of the ground, and crippling of the crop of grain; therefore neglect this work no longer than in *June*, for now the dock is making its green head: Which, indeed, ought to be pulled up, whether the season be wet or dry; but, in wheat or barley, it is better let alone by the hands, and only cut by the weed-hook, at the very beginning of *May*, if it be only to stop the dock's feeding. Some employ an instrument to raise this weed out of the ground in fallow-season, made with three irons, that in a sort of triangular manner enters the earth, and, with the help of the foot, forces up the dock from top to bottom.

Fern and Rushes.

These are sometimes a foot or two high and hurt both corn and grafs. To kill the fern, one mowed it in *May*, and twice the same summer afterwards; another whipt and beat it; others, have ploughed up a grafs baulk, carried away its surface, and ploughed the same ground again for corn: But these practices only checked it. In a certain park this weed was killed by ploughing the ground several times one winter and summer, till the earth was got fine; and then in *August*, the owner sowed the same with ray, which fed the deer the next year; afterwards by ploughing and sowing artificial grasses, and rolling the ground at times, he destroyed the fern. But as fern grows among trees and other places improper for using the plough, there was a roll invented, of a very large size, to kill the fern, and it had the desired effect: This roll was made with narrow oaken planks, two inches and a half thick, fastened by a wooden pin, on three wheels, that have only four spokes to each wheel. The diameter of this hollow roll is five feet ten inches, and its length above seven feet, through the middle of this an iron spindle or axle-tree is fastened, to which the wooden sharps are fixed to draw it by with two, three, five, eight, or ten horses, according to the weight you put into it; for the inside is made
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to hold stones, gravel, or other such ponderous bodies, to make the greater pressure; and tho' this weed has been found to run more than eight feet into the earth, yet in two years the roll has killed it. It will also crush down mole-banks, ant-hills, and casts of worms, and level grass-ground the better for the scythe. It has been observed not to grow any more the same year, if it is mowed on *Midsummer* day. The rush that mostly infests wet grounds, is checked by sowing coal-ashes, lime, foot, and peat-ashes.

Wild Oat.

This weed is notoriously known to be a most pernicious one, by reason of the great difficulty that attends its extirpation, and likewise on account of its easy increase, for this will grow amongst most corn, and scatter its seed before the grain is ripe, nor will it yield to any one year's ploughing of the ground, because of its several skins and hardy nature. On which account it surpasses most others, as is plain from its growing, in plenty, on breaking up meadow ground that has laid under grass some scores of years; for many seeds of weeds will withstand the culture of the earth, and the severity of the weather, much longer than the seeds of corn or grasses, insomuch that by the toughness of their coats, and their sulphureous nature, they have been

been proved to lie unhurt in the ground, more than the age of man; which I think is enough to confute the common opinion, that some ground naturally breeds weeds, without their seeds being before in the same. And why wild oats grow most in ground that is constantly sown with corn, I think may be accounted for, by allowing that such seeds, if but a few at first, will increase the more by often mixing them with the plough, and giving the earth no opportunity for their ruin. The best remedy, I know of, in the common husbandry, is after a summer fallow to plough the ground several times for a crop of turnips, or to have turnips twice together: But above all others, the plowings or breakings between the drills of corn, turnips or artificial grasses, will certainly and intirely destroy the breed of wild oats in a little time. Before I conclude this article, I cannot but observe the opinion of a certain person, who believed that those oats eaten by horses, and dunged whole, produce a wild oat, by reason of the damage they receive from the body of the beast: If this be true, it is not to be wondered at, if they grow in great plenty, where such dung is laid: In the vale among their random sown horse-beans, the sheep destroy the wild oats that year, by feeding among the beans, even in blossom-time.

It has been the study of several, besides what I have said to account for the breed of the wild oat, which in many crops of grain, appears higher than the natural oat, wheat, barley, &c. and especially amongst that corn which was sown on a lay, as when ground has been natural grass, some years together before, as I have, to my cost, experienced. Now how they are bred at first, I don't pretend to say, more than what I have done, and has been already writ by authors of a much more learned pen than my own; but in my humble opinion, when these wild oats have once taken the ground, by being brought by dung they were amongst, or amongst the seeds of corn that were sown, or otherways, and, by the negligence of the farmer, suffered to increase, they will multiply at a great rate, and shed their seed sooner than the grain they keep company with, which, being of a most hardy nature, lies on the surface 'till ploughed in, and there will remain unhurt for years, 'till the grass that grows over them be ploughed again; for such is the power of the oil with which the seeds of some weeds are impregnated, that it secures them sound for sixty or one hundred years together, 'till the ground is ploughed up again, and then they will sprout and vegetate like new sown seed; whereas, had they no oil in them, they would perhaps

perhaps rot in one year. Now the wild oat is one of the chief of the hardy forts, and so hardy, that, if it is sown in a rich fine garden-mould, it will not come up the first year. A farmer, that lives about two miles distant from me, had six acres of ground over-run with this horrid weed, which, being a chalky, loamy soil, was so subject to the wild oat, that having a crop of pease on it, the wet summer, 1735, the weed grew so thick, as almost spoiled the grain; however, to prevent this misfortune *in futuro*, the farmer gave the same land two plowings the succeeding winter; but, it proving a mild one, the wild oats were so far from being killed, that they increased the more for the plough's operation; for, about the next *Lady-day*, they begun to shew themselves very thick, which tempted the farmer to let them stand for a crop; and accordingly he mowed four loads off these six acres, that he made hay of; most of their stalks were near five feet long when they were cut, and, being a dry summer, he inned them in good order, hoping that, by thus mowing them in their full sap, it might be a means to destroy them. Another farmer mowed them off a ridge half acre land, in the vale of *Aylesbury*, and he had none to do him damage for twenty years after. Another, in *Cheffum* parish in *Bucks*, ploughed his ground twice, and harrowed it; for,

the finer the ground, the more the wild oat comes; then he mowed them early, and made hay of them. This he repeated by mowing them a second time after harvest, and killed them quite.

This weed is notoriously known to be the most pernicious of all others, by reason of the great difficulty that attends its extirpation; for where this has got footing, it seldom is totally vanquished; because where it grows amongst grain, its seeds are ripe, and scatter themselves before the corn is fit to cut, whereby it propagates itself, and encreases in the ground, to the great damage of future crops; for they are of so hardy a nature, as not to be so soon killed as other weeds. It is allowed by the most judicious, that new ground produces them most, by reason it is seldom sown thick enough with corn to tame its luxuriancy; and where grain comes up too thin, the wild oat often fills up the vacancy, which shews the benefit of allowing the ground seed enough; for some say, and I think with a great deal of judgment, that the best cure is to sow the land thick, and then the corn will choak the wild oats. It is observed, that some ground is so subject to them, that where the *Lent* grain misses, they will be sure to have this weed for a supply; which makes some say, it is the nature of the ground that breeds them: they mostly grow in the vale, and in the light loams
of

of the chiltern; in the latter of which, it was my misfortune to have too many of them this last year come up in a small ploughed field, that had been a meadow about ten years ago; here my wheat proved too thin, and up came the wild oat, and spoiled most of my crop, which will oblige me to sow it with oats, clover, and hay-seeds this spring, in order to have it a meadow again, and overcome the dismal weed; which is also often bred by grounds being too long, and too often sown with corn. Their remedy is winter fallowings, and frequent plowings of the earth, with sometimes chalking it well; but these will only check it, and not kill it so soon as full crops of grain, and pulling it up by the roots while green. If it takes in wheat, the ground must have a winter and summer's fallow directly succeed, which one of my neighbours have found the best cure of all others.

Crow or Wild Garlick.

This sometimes runs up as high as the wheat, with heads and seeds somewhat like onions, but not so large; it chiefly grows among wheat and barley, and not so much among oats and pease, at least it is not so much minded in them, as in the other two. It is such an abominable stinking weed, that when the wheat is at market, and this seed perceived to be mixed but in a small

degree with it, the buyer commonly calls it the *Devil* of a weed. One of my days-men told me, that he and another, as they were weeding of corn, espied some of the crow garlick, which so much resembled young onions, that his partner said he would sit down and eat his bread and cheese with a few of them; accordingly he cut about ten close to the ground, but it was not long before they began to swell the man, and forced him home as fast as he could go, where happily his wife gave him a dose of physick that she had by her, and saved her husband. This weed grows in many grounds, but chiefly in the stony, clayey soils, and is best killed by winter fallowings, frequent ploughings, and turnip-crops. The seed of this weed clogs the stones of mills, so that it is very hard to clear them of its flour, till the next summer dries it quite up.

Melilot,

Is a weed that grows among wheat and barley, but mostly in pease, oats and beans, and that both in vale and *Chiltern* lands, where it comes up much like lucern grass, about two feet high with a yellow flower, and a black seed like trefoil. If its leaf or seed is rubbed, it will stink the hands for three or four hours, and is so hateful to horses, that they refuse the oats it grows with. It is generally found in stony clays and wetish grounds; which, if crops cropped,
by

by too often sowings, will increase this horrid weed very much. Its remedy is the same as for crow garlic. Both this and the garlic are such offensive vegetables, as oblige some farmers to weed it out, to prevent its damage by the cow's milk in cheese and butter, as I have before observed.

Gould.

This is the commonest and most pernicious weed of all others in sandy lands. This summer, 1738, being a wet one, the gould got such a head among barley, especially, that there seemed to be as much weed as corn in some fields. Many of their sands, sandy loams, light brick earths, and such soils are hardly ever without its roots. It is one of those weeds that cause a despair of destroying it, where it has got but a tolerable possession. I have observed its growth in vast quantities of ground, where its great high bunches with golden heads, like a marygold, shew themselves at a great distance. There are four sorts of it that infest corn fields, as the white, red, blue, and yellow, but the last is the common weed. To check then this fatal destroyer, some lay down the same ground, with artificial grass; others get a crop of turnips, as often as they well can on it; others sow rye instead of barley, for this over-tops it. But, to kill it quite, the best way is to sow the corn in
E 4 drills,

drills, and then plough and clean the intervals with that and the break. About *July 10, 1738*, I saw the blue fort with many round hard stalks, three feet high, among barley, oats, and thatches in a gravelly loam.

Horfe-gould,

Is a general destructive weed, and mostly so in wheat: It comes up in a fine tilth, and flourishes most by a wet season, attended with a cold spring, for then the weed is apt to get the better of the corn, as being the more hardy plant: It will keep company with the wheat till the harvest, and then is about half the length of the grain stalks; shedding a great deal of its flat burr seed in that time, for this weed grows so thick, that it is impossible to weed it with the hand or hook; therefore some have attempted to eat it off with the wheat by their sheep, and failed; for when it is old, as commonly it is when the time is for doing it, the beast does not care to eat it, because it is then bitterish: but my next neighbour turned his sheep in full early, which eat up both wheat and weed; the consequence was, that the earth being a loam, and a wet cold time happening, while it was thus feeding, the weed recovered, and spoiled most of the crop of wheat. This yellow headed weed grows chiefly in stiff lands and gravels, both in the vale and chilterne.

Wild borragé, or cats-tail.

There are two sorts that bear this appellation, the blue and green, but the blue is the commonest and worst. This shews itself but once in three years, and then in the *Lent* crop of pease or oats, mostly in chalks, gravels, or sands, with a large head, and downright root; for it does not affect tilth earths. Between *Hazlemere* and *Godalmin* in *Surry*, I saw a large field of oats so over-run with this blue weed, and the red poppy, about the tenth of *June*, in a sandy loam, that I could hardly see, at a small distance, any other but these two fine coloured weeds, which made a pretty show to the traveller, but a woful one to the farmer: In the old husbandry it is best destroyed by pulling up with the hand in wet weather, or by the fin on the share, or by following the plough with mattocks. It is called cats-tail in *Hertfordshire*; in *Surry*, wild borragé.

Hog-weed.

This is the worst and commonest weed that infests our chilterne fields, because it draws away much nourishment from the grain, and takes up a great deal of room both above and below the surface, to the great damage of all crops of corn that grow among it. It roots about two feet down, and more upwards in stalk; its large head is first green, then white,

next

next yellow, and at last brown, and ripe in seed, which is a flat sort, so much like that of the garden parsnip, that it is difficult to distinguish it by sight. No ploughing nor fallowing can destroy this, nor will it yield to sowing the ground with clover or other grasses, or with turnip seed, and their common hoeing. Our way is to weed it in *June* or *July*, with the hook, but this only checks it from seeding, and causes the weeder to do a great deal of harm with his feet among the corn. To destroy it, it should be dug up by several men following the plough with their mattocks, for the roots shew themselves very plain in the furrow, and then their pieces must be carried off the arable land, lest they should grow, or be laid on the same for sheep to feed on directly, which they will greedily do; and not only sheep, but horses, cows, hogs, and rabbits, are great lovers both of their roots and stalks, and will fatten on them, if plentifully supplied, whilst they are green.

This is a general weed, that runs over most of our ploughed fields in the chilterne, especially where the sluggish indolent husbandman has the culture of them; for nothing will kill them but downright diligence and labour. I formerly bought a six acre field, that was so over-run with them, that I bestowed three several diggings all over

over the ploughed ground in the summer fallow season, and brought up many of their deepest minute parts, which cost me, I believe, five pounds; yet this proved only a check and not a cure; so that I was obliged several years after, to cut them up in weeding time, and have two men to follow the plough with mattocks, to chop off part of them as they appeared in the thorough; which with the help of the fin on the shar, will in time overcome them; but the cuttings of the hog-weed must be carried all off the ploughed lands, lest any take root by being left thereon.

Cammock.

There are too sorts of this stinking weed; the one has a honey-suckle head, the other spires up with a sort of grassy leaf above a foot high, and smells strongest: It branches and roots like a honey-suckle, but much more, and is a great spoiler of corn: It grows in patches, in loams, clays, gravels, and in some sort of white grounds. Their cure is chiefly by the mattock, to dig up their roots deep, and break the ground well to come at them, carefully carrying away all the fibrous or stringy parts off the ploughed ground: Their largest roots are so strong, as sometimes to set six horses,

Honey-suckle.

I mean the red sort, which when old, like the cammock, will try the strength of a team of horses,

horses, to break their roots; and therefore it should excite the care of farmers to prevent their growth, by giving the land frequent, deep, and clean ploughings. To this purpose the excellent method of bouting stiff lands, and bouting off the last bouts, prevents the breed and increase of the honey-suckle: and it is on this account that the two horse small farmer suffers much, because he is not strong enough to perform this work, nor to prevent the breed of this, and some other tenacious potent weeds. The honey-suckle is so much planted in some fields, that it has tempted several to let it stand for an entire crop of grass to feed cattle, or to mow for seed, which in some swampy grounds is serviceable; for though it is like clover in head and root, yet it won't hove the sheep or cows like clover; yet if you let it lie three years together, it is wrong, for then it will be apt to run its roots too far into, and about the ground, and so become a lasting enemy. Its cure is to chalk the land, and to dig with the mattock, or to give it deep and often ploughings, especially at fallow time in a dry season.

The thistle,

Is said to be an indication of good land, but where ever it happens to get possession, it is no welcome guest, for it does its share of damage among corn, proportionable to its root. It is most

most common in vale rich lands, and too often in our chilterne grounds, where in both, if it is let stand to seed, the winds will carry its light flew to great distances: This I know a great farmer so careful to prevent, that he makes his men with a mattock, or with the iron thistle paddle every year, to destroy them in the lanes near his fields, lest its feathery seed should blow into them and grow. Its cure is often and deep ploughings, chalking the land, and sowing it with clover; or better by a man's following the plough, and digging the roots out of the furrows. I knew a certain man to be at eight pounds expence the first year, five the next, and three the year following, to paddle up thistles in the same meadow feeding ground, and by this means overcame them.

The common thistle.

This sort of thistle hath stringy roots, and is one of the chief curses of the ground, ever since man's first disobedience to the command of his creator. This is the most common weed of all others, that infects vale, and all stiff soils in particular, both in ploughed and meadow lands, and is so pernicious, when they grow very numerous among corn, that, if they are not weeded out, they will spoil it. A vale Farmer in *Chedington* parish about five miles from me, laid out five pounds in one summer, by giving it to only one

man for his going over all his ridge-lands that lay fallow, to mow down the thistles, as they got a-head, for this he was obliged to have done, lest they feeded and spoiled his next crop of wheat; but by the way, I must observe, that the farmer was neglectful in his ploughings, or else there had not been such need of employing a mower.

Rag-weed.

This is a tall bunchy weed, that has many yellow heads or flowers, somewhat like the gould: it chiefly infests meadows, some whereof I have seen over-run with it in *August*, when it is in its full perfection: This comes merely by bad husbandry, for it is easily pulled up by the hand, after a great shower of rain, having a narrow bunch of fibrous roots, that grow near the surface like a crow's foot.

Wild teasels.

These are tall weeds that exhaust the ground much, and grow mostly in neglected grass grounds. They grow but in few places; but where they are, these, like the large ant-hills, may serve as beacons to the passing travellers, to let them know there lives a bad husbandman in the neighbourhood.

Arsmart.

This is a bunchy root, which, when got old, runs deep into the earth, and, having many
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fibres, cannot then be destroyed by the plough. I lately saw a moist, loamy, gravelly field near *Billericay*, quite over-run with it; and though it did not grow very high, yet it caused a thin crop of grain to be carried into the barn. Chalking the ground, and ploughing the land clean, while it is young, destroys it; so likewise do crops of turnips and cale.

Horse-mint.

This also annoys crops of corn that it grows among, and cannot be weeded, because of its innumerable stalks, but may be easily killed by chalking, clean ploughings, and by crops of turnips or cale.

Wild sorrel.

This ugly weed likewise very much damages the grain it grows among, and for the aforesaid reasons cannot be killed by weeding, but by sowing of turnips or cale, chalking the ground, and ploughing it often clean.

Colt's foot.

This is a most pernicious weed, and very hard to destroy, because its roots are great runners, and draw the goodness out of the ground, to the damage of the corn: in *March* it appears by its broad, yellow, round flowers or heads, which are succeeded by its broad leaves, that grow near the ground. Its cure is to chalk,
plough

plough and hoe the land, but the best of all by the break between the drills of corn: carry off its roots, for its very pieces will grow; and plough with a fin on the share.

These are one of the sorts that defy the farmer's endeavours to extirpate it, and wholly clear the ground they have taken a large possession of; which has provoked many to say, there is no destroying them, unless a house is built over them. They have white stringy roots, a very low broad leaf, that kills or cripples the corn that sprouts under them, and are quick and great increasers, both by the spread of their roots, and by their downy or feathery seed, if not hindered in due time. They grow both in light and heavy lands so potently, that they cannot be killed at once, even by the mattock. In a field near me, where the soil is a loamy gravel, that was well dunged, and sown with barley, the farmer employed several hands to pull up great numbers of them after a great shower of rain: at this time their roots came easily up, as this work was done on the thirteenth day of *May*, 1739; but would not sooner, because their stalks were not strong enough to allow a sufficient handle. What were pulled up, served to cripple their growth for that summer, but did not kill them. Others, at the first or second stirree-time, employed hands to dig them up with the mattock after the plough, which

which will certainly stunt and diminish their growth in their next crop of grain.

Here then, the new or drill-husbandry stands a proof, how much more excellent it is, than the old virgilian husbandry; for, by drilling, the horse-break has an opportunity of easily destroying this master-weed, which is the cause of impoverishing many tenants, both in vale and *Chiltern* lands, and consequently of lessening the landlord's rents:

Bind-weed.

It is an ugly companion among corn, especially if the spring-time is attended with wets and colds, for then it is natural for this weed to get the predominancy, which sufficiently appeared in 1732, in the moist clays and loams, where it grew up creeper-like from the bottom to the top of the wheat stalk, hauling and pulling down the same, till it spoiled the ear, and thus it extended its mischief to almost a whole field of wheat together. Its remedy is deep ploughings, due fallowings, and chalking the ground; for according to my observation, it comes most where these three are chiefly wanting.

Black Bennet.

This is a sort of grass-weed, that kills vast quantities of corn, or at least very much lessens the crops. About the fourth of *May*, 1730, the black bennet began to show itself a foot long

among grain that was sowed in tilth and lay-grounds, having before that time a long wet season, attended with easterly winds, when the latter sown wheat fared best, because when the severe weather was over, its youth caused it to run faster than the forward sown, and to get the better of the bennet. This weed does most damage among wheat, in clays, and moist loams, occasioned chiefly by sour, rough tilths, and a wet cold spring: its remedy is a fine tilth, and a dry season to sow the corn, in a well manured soil, that has been soundly chalked or limed.

The black bennet is worse than the white bennet; but both are so pernicious to crops of grain, wheat especially, that, when they are very numerous, the ground poor in heart, and the summer proves cold and wet, the bennet oftentimes spoils more than half; and for which there is no remedy, till the ground is cured, by frequent ploughings and sweet manures for another crop. The black bennet, in such a soil and season keeps company with the height of the wheat to this time, and generally to near the time of reaping; but the chief occasion is by sour, rough tilths. To this I must take notice of the too common, unhappy circumstance, attending this and other weeds, that cannot be taken out from among the corn; and that is, their unavoidable shedding their seed, and laying
a found-

a foundation for a greater swarm of them afterwards. This one misfortune, I should think, is enough to shew the excellent use of the drilling husbandry, which gives the farmer an opportunity of destroying and preventing the growth of all manner of weeds, beyond any other invention whatsoever.

Crow-Needle.

This is a spreading weed, which bears a small white flower, and grows about half the height of the corn: its seed lies in the bottom of points like needles which are about an inch and a half long, that oftentimes very much foul the corn, by their being broke to pieces, when they are thrashed with the grain, and are difficult to get clean out: its remedy is sowing clean seed in a pure tilth.

Cliver.

This twists about the wheat like the tyne-weed, and does its damage much like it: Its seed, is a like round burr, which requires some labour to clear out of the grain by the screen and the throw: both this, and the crow-needle seed, will grow again if sown, though some say not: this is likewise best prevented by sowing clean seed, and a good tilth.

Darnel.

This is a rampant weed, that mostly hurts wheat; because in barley, its quality is to add

strength to the beer, by making it more heady, which causes the maltster not to find much fault with it, if not in too great a quantity: but as the colour of its flour is brown, feels rough, and has some scent with it; the mealmen do not like it among wheat: this is a most multiplying weed, for many of its high stalks will carry twenty side-shoots, and every one six corns in it, so that twenty of its heads are enough to spoil half an acre of wheat: It is of so hardy a nature, that it is usually said, the dunghill will carry it to the field. A farmer that rented sixty pounds a year, said, he lost twenty pound by it in one summer's crop; and in the barn, it is almost impossible to separate it from the wheat; because, a great deal of it is near as big as a wheat-kernel; nor will it all swim on the top of brine or water, as most other seeds of weeds will, for that the largest seeds of this are as heavy as those of the wheat: its cure is, by throwing it in a barn, running it through the wire-flat screen, or better, in the new invented round-wired screen, that the wheat may be sent clean to market: its prevention is, by sowing clear seed, which ought to be changed every year, from a different soil.

Ches-Seed Weed.

This is a sort of darnel, but grows in a different manner, hanging its small stalks, which are about an inch long from the great one, in several little bunches.

Cockle.

Is a little seed with a black hull, full of white flour, for which reason the mealmen do not much dispute its being among the wheat, if not in too great a quantity ; but as little seeds oftentimes do a great deal of harm, clean seed changed every year prevents it.

May-weed.

This is a stinking venomous weed, which bears a white flower, and is well known to our *Chiltern* reapers, who sometimes have their hands and legs so blistered by it, that they are not capable of working till they get cured by the application of house-leek juice, mixed with cream, or some other medicine : It very much cripples grain, and grows chiefly in wet loams, clays and gravels, by means of four tilths, and showery ploughing times, which make a dry sowing season, and a sweet fine tilth, its cure.

Hail, or Hell-weed.

It is mostly a vale-weed, but in some grounds of the *Chiltern*, we find, it will grow and run among the horse-beans at particular seasons, as some say ; but I deny the breed of this weed any other way than its seed, which is often propagated by means of the hill-farmer's buying his seed in the vale, for the sake of improvement by change ; for amongst the beans comes some of

this hail-feed, which will over-run many acres in a little time, without perceiving any root it has, but will twist about the bean-stalk like a cord, and cripple the crop: it comes a little before the blossom, and cannot be remedied by any contrivance so well as by sheep's feeding among them on weeds and grafs; for, by this, their bodies will press and break the strings of this thready enemy, and for this reason it is, that the vailmen let them be here till after they blossom. This hail-weed has a root at first, but as soon as it fixes itself to a bean stalk, it quits its root, and is fed by the bean-stalks, to which it will fasten, and run from one to another, a furlong or more. The want of this knowledge puzzles most farmers, so that they cannot account for its running, as not being able to find its root.

Briars, and Old-man's Beard.

Be sure to cut the briars at the bottom out of your hedges, and likewise, what we in *Hertfordshire* call the old-man's beard. They both rob the ground much, and choke the quick to a great degree; the latter, especially, will destroy a large hedge in time, and therefore by wounding their biggest parts at this time of year, it will cause the sap to run out; and, by repeating this piece of good husbandry
yearly,

yearly, you may depend on their destruction, do it by the long weed-hook, or otherways.

The great Boar-thistle.

These have a tap-root, and draw a great deal of ground. A diligent farmer at *Wards-Comb*, in the parish of *Ivinghoe*, in *Bucks*, who had many of them that grew in a chalky loam there, destroyed them by pulling them up with the hands the latter end of *May*, and the beginning of *June*. This boar-thistle appears also in many hedges, with its red seedling heads, which being of the feathery sort, if let alone till they are full ripe, the winds carry them about to great distances, and this may do a vast deal of harm; therefore be careful to employ the common five feet long weed-hook, which will enter into the little hollows of hedges, and, in the thistle's green age, easily cut them in two at the bottom of their stalks, make them bleed, and spoil their growth. A keeper of a park set some men to mow some of these, but they said it was not worth while to run here and there after a boar-thistle; but he answered it was, because their seed would blow a mile or two, and in time infect the whole park.

To kill all great Weeds, the best Way.

With mattocks, let two or more men follow the plough, while you are stirring your
F 4 land

land for turnips, or wheat, or cole. This work gives the farmer an opportunity, the best of all others, to destroy or cripple all sorts of weeds, as the cammock, which is thought to be only a honey-suckle root, till by age, its many stinking, stringy roots become as large as a little finger, and run very wide and deep into the ground : the cats-tail, or wild burrage-root, increaseth fast in light land. About two or three miles off *Godalmin* in *Surry*, in a large field of a sandy loam, I saw such a numerous parcel of this blue weed, and the red poppy, that I could hardly perceive any oats that grew among them : likewise the deep-rooted hog-weed, clob-weed, wild parsnips, dew-berry, briar roots, honey-suckle, dock, gould, and thistles, and others, which will bleed, or issue out their sap, on being wounded by the mattock and die, or at least be so stunted by this, and after ploughings and diggings, that in time they may be overcome. This piece of husbandry stands my best friend, in the destruction of weeds, and which I every year have done in the fallow season, while the plough is at work ; but above all times and seasons in the year, there is none so good as the month of *August*, for then weeds are in their last autumnal shoot, and then it is that one stroke of the mattock does more service towards their destruction, than two in former months.

Mustard seed.

This weed chiefly grows in the wet grounds of the low vale, where it runs up about two foot high, with a yellow flower much like unto charlock, chiefly in the watry thoroughs, between their half lands; and therefore does but little harm, because it does not grow among the corn, but is annually gathered as a most valuable thing by the poor people.

C H A P. II.
OF THE SLUG.

THIS insect, as far as I can understand, has escaped the notice of all authors; and therefore I shall here be the more particular in my account of it. There are two sorts of slugs, or rather two colours of them (occasioned, perhaps, by their youth and age) for they both agree in bigness, shape, and in their mischief for about nine months in the year; are white and black, an inch or more long, but have no shell. The slug is bred, both in the field and garden, by small eggs, that they commonly lay in *August* in the ground; and here, in many places, they lie undisturbed till *Candlemas*, when they crawl out of their nests, and begin to feed on the sprouting vegetables till *November*, if *October* is a mild month. Some think the old ones die every year; others

others more probably, that they wrap themselves up in dead leaves, grafs or other stuff, for their preservation in cold seasons; yet, when winters have been attended with long and violent frosts, as that was in 1739, it kills most of these insects as I am sure that did; for we have had none to signify in the two following summers. In some wet, hot summers they do a power of mischief. My neighbour sowed pease in *February* in the field, and, by the first of *April*, they were eaten up. In *April* 1738, the slugs were so thick among the random-sowed pease, that pottles of these insects might be gathered in a little field. The first green sweet sprout of some pease were eaten, before they could be well seen; when this happens the crop is spoiled. Or, if they let it alone till the stalk gets up, and eat them down afterwards, it is of bad consequence; because if the pea happens to make a second shoot, as sometimes it does, and grow the thicker for it; yet then there is commonly a great deal of straw, and but little corn, by reason of their late kerning. In *September* they will lie and eat holes in the turnips, and get two or three together into a hole. A neighbour of mine gave one ploughing to a wheat-stubble, and harrowed in rape and turnip-seed together, for the sheep to feed on their leaves; but the slug presently eat up all, while they were in their two seedling leaves.

They

They will feed on young carrots and turnips to that degree, that many thousand acres of the latter have been destroyed in one year, and that after the land has been sowed two or three times in one summer. It is these insects that help to bring on the rot in sheep, by their slimy watery bodies, which the sheep take up in feeding on commons, and elsewhere. In short, the slug not only hurts young carrots, pease, turnips, clover, rape, flax, &c. while they are in their sweet second leaf, but continue their mischief to the pea in particular, so long that it is *Holy Thursday* very often, before the farmer can tell how it will be with them. They will eat thatches, or tares, ragged, but not so easily kill them as the pea. The bean they never hurt, because it is tough and bitterish. It is in warm showery weather, that they do the most damage; for in a dry time they disappear, and, by that, the plough, and the harrows, many of them are killed. In the day they lie in little holes under a young turnip, which serve as passages to their cells; and, in the night, thief-like, they do their mischief. If the summer is for the most part dry, they do but little harm till *September*. This insect is likewise the pest of the garden, as well as the field, where he devours young cabbage plants, kidney-beans, and many other culinary vegetables, to the almost ruin of the

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laborious

laborious gardener, who knows no better way to destroy them than with his fingers or scissars, whereby he loses a great deal of time and pains.

C H A P. III.

OF THE RED WORM.

AS clover and other grafs lays are in particular more subject to the breed of worms and grubs than other ground, by reason of its longer resting from the plough and harrows; it is absolutely necessary to provide against their rapine, which here they commonly commit on new sown wheat, by gnawing its first sprout, or blade, just within the ground; for thus I knew a farmer lose, I believe, twenty pounds in one field, by the damage of small red worms, while the wheat was in its infant growth, in a gravelly chalky soil, about *Albollautide*. Now it is not steeping the wheat seed in brine that will effectually hinder such a loss, for the strength of the brine and lime may be soon drawn or washed away, and then the worm may remain master.

The winter, 1735, being mild, the worms lay in the spring time near the surface, and destroyed a great deal of barley, by gnawing it just above the root. My next neighbour sowed a field with barley early in *March*, that by the middle

middle of *April* was most of it devoured by worms, and spoiled by them, and the chill of a cold wet time, which brought him under the loss of labour, time, and seed, and obliged him to plant the same ground with garden beans directly. Now this damage was brought on the more, by his dressing the land with dung, which being of a warm hollow nature, presently invited these insects towards the surface for feeding on it; and then, meeting with the new sprouting blade of the barley, it served them as a delicious food, which they greedily eat after a long winter's confinement in their deep cells; and the more, because there was no other vegetable, at this time of the year, in ploughed ground for their subsistence, as it evidently appeared in those places where the dung lay; for here the corn was eaten, when at the same time that escaped which was not dunged; and therefore sheep-folding, foot, lime, horn-shavings, oily or greasy rags, or such as had been sprinkled with urine several times, or tobacco-sand, or peat-ashes, and more particularly the nitre, &c. with which the barley seed is loaded, are good preservatives, and much safer against the damage of worms and slugs than common dung. But this was not altogether occasioned by the dung, for there was another cause no less fatal to the destruction of the barley; and that was

was a lay of clover, that this field had been under two years before, which naturally increased the breed of worms, for all restings of ground are as so many friends to this insect; especially in wet, flat, loamy land, as this field was. An instance of this was plain to my observation, in some sandy mud, that had lain three years in the side of a hole, where road fullidge run into by the wash of rains, which I had emptied every year, but a small part of it escaping the shovel, it became full of red worms, the rest being intirely free; therefore many are so timorous on this account, that they won't sow wheat or barley in such ground, but a crop of oats first, which is less valuable, or horse-beans, that is less hazardous.

BOOK XVIII.

Of the MANAGEMENT *of* GRASS
LANDS.

CHAP. I.

OF IMPROVING MEADOWS.

THERE are two sorts of meadow-grounds, the upland meadow, and the vale meadow, &c. The first is generally freer from moss, and other excrescences, than the last; yet both meadows, as well as ploughed ground, are quickly ruined, if not husbanded. The upland meadow, though less subject to run into moss than the low wet sort, will acquire this foul and most prejudicial weed, if means are not used to prevent it; for all sorts of grass grounds will, more or less, moss, as iron rusts; and the more, if it is every year mowed, and not dressed; because moss grows the closest together of any vegetable; its roots miss hardly any part of the ground

ground that they do not draw virtue from, to nourish their growth; which consequently must starve the roots of the grass, where this ill neighbour reigns master, and gets the dominion; which reminds me of a bad husbandman's management in this respect.

An upland inclosed level meadow I knew very well, and that its grass was ruined merely by bad husbandry, because it was occupied by its careless idle owner, with several other fields of ploughed grounds. To clear off the moss a five acre field had acquired, that grew so high as to reach up to the ancles of a person that walked in it, he got a bull to be baited in this meadow, to kill the moss by its trampling, and that of the dogs and men. But this, though it might be said to check it, did not near cure it; for the moss grew and increased so powerful, as to cause this field to return no more than half a load of hay in all, in one whole summer.

I know a most large noble park, situated about eighty miles distant from *London*, where three hundred acres were over-run with mole or ant-hills; some single ones of which were a cart load; for as these are commonly first made by the moles, and afterwards possessed by innumerable companies of ants, they, by long possession increase them to a prodigious bigness; and stood so close together, both in this park and in the vale meadow,

dow, that there was hardly any vacant level ground between them. Upon this the lord's steward applied himself to me for a proper plough to cut up and destroy these ant-hills; and, for only twenty shillings, I helped him to a complete strong one, that effectually answered his end, by clearing the park, in a little time, of these pestiferous hills, that poisoned the grazing-ground; for where these grow in abundance, there is but little grass on their bald heads, and not much on their sides; and that, as is very probable, may be unwholesome to the beasts, as the dung of the ants, with their urine is mixed among it. So that the lord and his ancestors must have sustained a very great loss by this means, because they certainly lost vast quantities of grass or hay, in so many years that these hills have been making, which they would otherwise have enjoyed, had the place where these stood, been a clear level grass ground, as now it is made, by the main help of this excellent ant-hill plough, that does more work in one day than twenty men can do. Thus both those grounds were cleared of these odious hills; which when I behold in any inclosed place, I am ready to believe the possessor to be a very negligent person, or a very ignorant one; but those that take them away, and cure the ground of them, to be as diligent and wise, because

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they do not grudge to lay out a penny to get a pound, which, in this respect, may be justly said of such. But the work does not end here; the ploughing and cutting up of these ant-hills by this plough, with the help of another cheap instrument, was not all the cure.

After all these were cut through, men with forks and shovels laid the earth in heaps in this park, to be burnt to ashes; then grass seeds were sown over all the ground, and harrowed in, and the ashes sown on them; which not only nourished the sprouting grass roots, but bred a honeysuckle-grass beside; so that in two or three years time the place, where these nasty foul ant-hills stood, became full furnished with a most excellent grass. But though this lord's steward took the method of burning his ant-hills into ashes, to improve the ground by them, the other lord's ploughman did not; for here, after the ant-hills were all ploughed and cut from the surface, men followed, and with forks and shovels laid the earth in such large parcels as rotted in time; and, when rotted enough, it was spread over the ground, to encourage and assist the growth of young grass, that naturally and spontaneously came up.

Thus both places, that lay above a hundred miles distant from each other, were entirely cured of these great old ant-hills, and the ground thereby

thereby brought into a fine level condition, whereon grew afterwards the best of grass. Since which another lord has done the same, by sending for one of these ploughs, and clearing his park in *Oxfordshire* by it, of those ant-hills that have, time out of mind, been increasing; and now enjoys the benefit of a great deal of good ground, that before lay waste. There are many thousand acres of ground still most shamefully stocked with these ant-hills, that do not yield their owners a quarter of that profit that they might enjoy, if they were served as the aforesaid lands were.

How stupid, then, must these persons be, and wanting to their own interest, who let their land lie so abused by such ant-hills, and yet may be thus easily cleared of them! Surely, if it was only to avoid the ridicule and censure they justly bring themselves under, from passant travellers, for letting such a wild sight of filthy ant-hills appear to them, one would think it enough to incite them to remedy this great evil in all haste; for where many of them lie exposed (as many do in grass-grounds but a few miles off *London*), the common question is, whose slovenly ground is that so over-run with mole-banks, or ant-hills?

Draining.

A gentleman being obliged to take his large farm into his own hands, had a certain low mea-

dow, that contained fourteen acres, which had a pond in the middle of it, that served as a receptacle for receiving all waters, that might otherwise stand and hurt the grass; so that there was here no occasion for any subterraneous drains, except such as lay always open at top, of about a foot deep, and a foot wide, that served to carry the waters from all parts of the meadow into the pond; and, when this was full, there was a conveniency made for the overplus water to go off into a lower ground. This meadow being thus always kept dryish, it did not suffer by inundations: however the former tenants would not be at the charge of assisting this field with any dressing; but kept every year mowing it, till indeed they had much impoverished it, notwithstanding it naturally was a very rich soil. The landlord, finding it in this poor condition, and having a potash kiln near him, bought great quantities of this manure, which, in *April*, he had thrown about this meadow with a shovel; but, a dry hot summer succeeding, it did little or no good: but the next year, and for several succeeding ones, it produced vast crops of excellent grass.

A tenant, a very industrious diligent man, who rented a farm in *Hertfordshire*, having a three-acre grass field that produced little else but weeds, by reason of the waters that frequently

quently lodged on it, cut a drain through it about two feet deep, as narrow as a man's wrist at bottom, but wide at top, with a shelf on each of its sides; this he filled up with bushes, pea-straw, and mould; and then gave the whole only one ploughing, and harrowed in wheat-seed; and, by the best account I could learn of his success, he had fifty-five bushels of wheat in return, from each acre. This improved field I am ready to shew to any gentleman that thinks fit to have me wait on him to it: and it is in this part of our county, where the best workmen in *England*, for draining lands, are thought to live; for from hence they are sent for to places at a great distance.

There is a part of *Hertfordshire*, that lies very low and wet; insomuch that their ploughed grounds are hardly worth half a crown an acre, and some of their wet meadow but little more. This put them upon an invention to better their case: and one of their gentlemen, of a good estate having made great improvements, by cutting drains in such grounds, his example is now followed by others. They take a wheel or foot-plough, and make as deep a furrow as they can with it, which saves some charge of digging with the spade; then the common spade must be employed in digging down one spit-deep; and, with another narrow spade, they

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dig

dig down another spit-deep: next they make use of an iron scoop, about three inches broad, to take out the bottom-earth; so that the whole depth of the drain, or trench, will be about two feet and a half or hardly so much, as the situation of the ground will admit of: When this is done, they take blackthorn bushes; and, though some of them are as thick as a man's wrist, they tuck them into the bottom of the drain, as light as possible, to tie about a foot thick. On this they lay wheat or pea-straw (but the latter is best) to the thickness of three or four inches; then they fill all up with mould, and plough over it: this will last twenty years good; but wheat straw not so long. In this sort of work, they are forced, sometimes, to cut several drains; some short, some long, and sometimes across, to run the waters into the main drain, all in a sloping posture, for carrying them off into some pond, or ditch in their own ground; for the waters must not run into a neighbour's, without permission; though it sometimes happens, that a neighbour's ground becomes accidentally drained, by thus making cuts in another's. They generally begin to do this work in *April*, and continue it all the summer; but their meadow-ground, sooner or later, as conveniency serves; if the last, the difference is only in laying down the turf at top, and the mould employed somewhere else.

The

The ground that I am here writing of, is the same where the ant-hills were ploughed up, and let lie in heaps to rot; and, after they were sufficiently rotted, the same was carried about and spread over the meadow: after this they dug drains; and the earth, that came out of them, was likewise spread over some part of the meadow; all which served to thicken the ground, as well as dress it; for here the springs lie very high; which made the roots of the grass the more liable to be chilled by the waters of those springs, and the ground more subject to breed mois and weeds. This proved to be an excellent piece of service to the whole meadow. And, to complete the work in the greatest perfection, they cut several drains in the same, three feet deep, six inches wide at bottom, and three feet wide at top, leaving a shelf of earth about the middle of each side of a drain. When this was done, as the gentleman always kept a large pack of hounds, the bones of horses heads, that were killed for them, they put, with others, into these drains, and bushes upon them, then mould, and last of all turf; so that the whole inclosed meadow, in one year's time, appeared a fine grass-ground that yielded the best of grass; because it never was flooded afterwards, as it was formerly, when, by inundations of waters, this place used to lie covered by them, in long and very rainy

seasons ; for the waters were, by these drains, all carried presently off into a small river, that ran not a great way off it. Nor could the springs annoy this ground as heretofore; by reason the swell of their waters was likewise drained off as the rain waters are ; so that now the meadow seems to lie as dry as an upland-meadow does ; and may be said to be as rich ground as most are in *England*, for fatting oxen and sheep ; and some are, every year, fatted accordingly : for this meadow contains about an hundred, or more, acres, lying within four miles of my house ; and which I am ready to shew any curious gentleman, that has a mind to be satisfied of this great improvement by ocular demonstration.

Watering.

This piece of husbandry ought to be made use of, where-ever ability and conveniency will admit of, as being the cheapest and most profitable way of obtaining the greatest crops of grass in the driest seasons. About the year 1737, a gentleman undertook to water and otherwise improve two of his meadow-fields, by means of a rivulet that ran through his ground : and, in order to do this effectually, he built a sluice of five feet wide, at the head of these two ; and made ditches, one on each of them : by which, on stopping all the water at the sluice, he diverted the natural course of it, that used to run through

the middle of the meadows, and made it run constantly into the two side ditches ; and, when he thought fit to water the ground, he opened the sluice ; and thus watered a hungry gravelly grass-soil. The dimensions of the ditches were, in some places, four feet wide at top, one at bottom, and four feet and a half deep.

For this purpose, some allow overflowings to be best done in winter ; others, not till *March* ; and then only for three days together, at most, at a time ; for, if the water lies too long, it will cause the grass to turn yellow, and rot ; or, if cattle go in, before the ground is dry, they will do damage. On this account some are so careful, as to flow their meadows in the night, that they may dry the sooner in the day ; and, in this manner will water them once a week or fortnight, in hot parching seasons. Another benefit arising from making such ditches, and diverting of waters, is, that the earth that comes out of them may be employed in filling up the parts where the water formerly ran, and levelling the rest of the ground, so as to make it lie in an even posture, the better for lodging the waters in a due proportion. But I should have said that the earth that came out of the ditches, and the parings of the high parts of the ground, that were laid to make all level, was ploughed ; and the fields were sowed the first year with horse-beans, the
next

next with wheat, and the next with oats, ray-grass, and clover: after this, it lay, to become a natural sward: and, to supply these meadows with water, for cattle to drink at, a pond, or ponds, may be made to be fed by the running waters of the ditches, if the springs are not sufficient for that purpose. This is the most profitable way, of all other, for improving low meadow-grounds; even so profitable, that, by such means, a poor soil is converted into a rich one, and the owner made to enjoy the biggest of crops of grass, when his neighbours upland-meadows are parched up by the scorching sun, that sometimes wholly deprives them of this advantage.

C H A P. II.

O F H A Y.

OUR common method in *Hertfordshire* is this: About eight o'clock, or sooner, the same morning the grass is mown, we ted or throw it out as thin as possible, shaking it very carefully, that none remain matted, for, on this first flinging it abroad, very much depends the making of good hay afterwards. The same day, if the weather and number of hands will permit, it may be turned once or twice, and after that
raked

raked into wind-rows, and then put into grass-cocks, and so ends the first day. The second we fling it out, and shake it into square leets, which as soon as done, we rake the interspaces clean, and turn it two or three times before night; at last we rake it into double wind-rows, which are done by two persons raking against one another, and then put it into bastard-cocks, that are as big again as grass-cocks, and so ends the second day. The third, we throw it out into leets, or broad square parcels again, and, when the ground is all well raked between them, we turn it as often as the weather will permit, which is sometimes three times in a day; and in the afternoon, about four o'clock, and before the dews fall, we cock it up into heaps, as big again as bastard-cocks, and rake all the ground clean about them, and thus ends the third day. The fourth, when the dew is clean dried off, we fling it into leets again, and, after it has had one turn, we put it into staddles, load it, and carry it away into a barn, cock, or stack: but this tedious way is never done, but when the weather will not allow its being got in the second or third day. Some indeed, who have got a great many hands, will ted their grass about six or seven o'clock in the morning, and when it is very short, and the weather very hot, will turn it twice the same day, and get it in the next, by raking it into
2 wind-

wind-rows, after the two turns, and putting it up in grass cocks, and next day, with one turn, rake it up, and carry it in. Others will only give it a ted as soon as mown, at noon rake it into rows, and towards night put it into grass-cocks, and so on, as I have before hinted: then, to know when it is enough made, take a handful, and twist it short, and, if it breaks easily, it is made. For a *London* market they endeavour, all that is possible, to make it so, that it may hold a greenish colour all the year after; but in *Aylesbury* vale, and other parts, they alway strive to inn it a little under made, or dampish, that it may mow-burn, and become reddish, in order to give the hay a sweeter taste and smell, for inviting cattle to eat a great deal, and drink much; which they reckon will breed the most milk, or make a beast fat the sooner.

A person lived about twenty-seven miles from *London*, and, in order to enjoy his hay finer than his neighbours, he built him a *Dutch* barn, in 1738. Accordingly, the succeeding crop was put into great cocks, of about half a load each. These he let stand in the field, with an intent to carry all in one day into the barn; but heavy rains falling, he was obliged to defer it, and when the fair weather came, he went to cart, and carried all into the *Dutch* barn, where it lay in a bad condition, because he inned both top and bottom,

bottom, while they were wet; whereas had he thrown those two extreme parts out, and dried them after the middle part was carried, all had been well: but, by this mismanagement, he lost the felling of his hay that year.

A considerable quantity of hay, had been got in so wet, that it heated in the barn to that degree, as to become black and stinking, which they perceived, when they went to take it out the next winter for feeding deer: This made them let it lie another year, and contrary to their expectation, it became so sweet by being mow-burned, that the deer eat it all with greediness.

For this purpose, I use a tub about two feet diameter, and three feet long, or a long basket, or four boards, of a foot wide each, and four feet long, nailed together; either of these, when the ground layer is up to its top, we pull it up higher, and so on till our mow is finished, and then the hole, or dry well, that it thus makes, serves as a chimney in the middle of it for evacuating the fume, steam, or smoak, that the heat or sweat of the hay causes; and by which you avoid the danger of having your mow take fire, otherwise you run a great risque of it, especially if the hay is hot in damp or wet, as sometimes by necessity it happens. As to a cock or stack of hay, that stands in the open air, if of any considerable

able bigness, it cannot be made in one day, requires time to settle, before more is added; and for this purpose, it often happens, that they innseveral before they can finish a cock, or stack. In the mean time showers of rain sometimes fall and wet the exposed hay to great prejudice, even for whole nights and days together. To avoid which some lay straw on the top, but this proves a loose covering, though it lies but a day or two: therefore at *Rotherbith*, or some other place by the river *Thames*, you may buy old ship sail-cloths for a small matter, and sew them together till you have one intire cloth of twelve yards square, which is the common allowance. With this, at every day's end, you may cover your cock or stack, till it is finished, and so at any other time, without being exposed to the great damage that often ensues, without such security. But observe, that if there be no hole or chimney made in such cock, or stack, this cloth will keep in the heat, and help to fire it the sooner. On which account, both these are perfectly necessary. Some are of opinion, that hay is better kept abroad, than in any close barn, because the sides of boards, or wall, help to make that part stink that lies next to them. And to be more commodious in making cocks and stacks, some, as soon as the hay is made enough, will put it into many cocks in a large field, that will contain about
half

half a load each, and at the same time tread it well, that it may lie in a pyramidical safe manner from wets, till they begin the work of cocking or stacking.

Not only in marshes but in many wet, low, vale grounds, their hay is often coarse, by reason of the sedge, or rusty stalks that grow among the grass. A case of this happened in *Aylesbury* vale, where is a meadow about ten acres, lying near a water-mill, which was generally flooded, when the water was pent up at the mill-head. This caused a sort of rush or sedge to grow, that made a hay little better than some straw, especially if they let such grass stand till it is ripe. The occupier was told, that coal or wood-ashes, or pot-ashes (but the first is best for this use) would cure it; accordingly many were got and sown, which by the very next summer, not only killed the sedge or round rush, but brought up in its room, a fine three-leaved grass, that made the best of hay. How faulty then must those be, who will not be persuaded to such a cheap and useful improvement, as I am sure thousands may enjoy, that now do not. Observe that such coarse sedgy hay cannot well be too little made, for, by making it but little, it will mow-burn, become sweet, and cause cattle to eat and drink plentifully.

At

At a certain place about twenty miles from *London*, they take care in the tedding of their grafs, but throw it out at a fork's end, in a careless random manner: this is very wrong, because it is a fundamental error, for, unless grafs is well shook at first, it is hardly ever, as I said before, to be thoroughly parted afterwards, and consequently the more difficult to make it all alike into a pure hay. If the grafs is in full sap, it requires the longer time to make. The oftener hay is turned, the hollower it lies, and the faster it makes; therefore some will turn it three or four times a day. In case the grafs-cocks are catched and wetted by rains, they must be daily turned, though it rains a little: because, if they are not moved, or turned topsy-turvy, they will grow yellow, or black, and stink; for, by turning them, a good colour is preserved, and the sweetness kept in. When rain is apprehended, and the grafs or bastard-cocks are dry, double or treble them for their better security. Hay, that is made from off grafs-baulks or ploughed fields, is never so good when the field is under lent-grain, as it is when under wheat, because then the grafs has the longer time to grow, and the better for succeeding the fallow year.

I shall now proceed to give an account of the excellent *Hendon* way of making hay; because these farmers are reckoned the best in *England* for

for curing their hay, by making it so as to retain a green colour for years together, in order to obtain the greater price at the *London* market, where they sell most or all of their hay at times throughout the year; for several of these hay farmers live within six or seven miles of *London*.

The first day—They mow, and let the grass lie in swarths.

The second day—They begin to ted it at eight o'clock in the morning: at ten they turn it against the wind, that breaks the tussocks, which otherwise hang together, and would fall heavy. At two o'clock they turn it again contrary to the last way: then in the evening they rake it into windrows, and set it up in grass cocks.

The third day—As soon as the dew is off, they break the hay into square staddles, and afterwards turn them two or three times the same day, and at evening set them up in bastard-cocks.

The fourth day—They break it out into staddles again, and give it a turn or two that day. Then they set it up in great cocks fit for carting. This way makes it of a fine green colour, without which there are little hopes of sale. But in case of rain, they run it up in great cocks to save the colour, to obtain which is their chiefest art.

Latter meath, or second mowing—They make the very same way. This after-meath, or, as some call it, rowen, they sell to the cow-keepers about *London*; for as hard hay is best for horses, the second mowing, or soft hay, is deemed as well for cows; and for this purpose is the better liked of, because it is cheaper than the first crop.

An acute farmer, who lives about ten miles from *London*, in a moist summer, has commonly three loads of hay off one acre of meadow-land; I mean so much when it comes out of the barn, and yet never feeds his natural grass with cows or sheep, only turns in five horses into it, and they generally leave a great deal of fog to rot on the ground, which, with the help of his well turned dung-hill, dresses his ground for another year: notwithstanding, there is this inconveniency attending such good management, for as he shuts up his meadow at *Christmas*, leaves such foggy grass behind, and manures well, in case a wet hot summer succeeds, the bottom part is apt to grow rotten before mowing-time, and then the crop of hay is much damaged for a *London* market, besides causing a great deal of trouble and charge in mowing it. Yet it is certainly better husbandry, than that of shutting up a meadow late; for then, if a very dry summer follows, the grass will
be

be burnt up, for want of an early head to cover and shade its roots.

Some of the *Middlesex* meadows are shut up at *Christmas* from the horses and cows, and then follow the ewes till *Candlemas*, when they are shut up for good. From this meadow field they go to another, that is shut up in the same manner, by first feeding the great cattle, and then the ewes, till *Lady-Day*. Now these two sorts are to be mowed twice in one summer; but others, wherein they keep the ewes till late in *April*, they shut up for mowing only one crop off them, and that is commonly done, after the first crops are all got home: which last hay is to be kept for feeding their own cattle in winter. Therefore it is the latter end of *April*, that many of these farmers are forced to turn suckling ewes into lanes, and on commons, and, accordingly are obliged to give over suckling for this season, till they begin again in *September*, by buying western ewes big with lamb, and some with lambs by their sides.

Selling hay.

In the *London* market, the same year it is made, it is deemed new hay until *Michaelmas*, for which reason the farmer is obliged to make his truss weigh sixty pounds to that time; but afterwards their trusses weigh only fifty-six pounds a piece, the new hay, by them having

passed through all its sweating. Thirty-six trusses make one cart load. At *New-market*, they buy their hay immediately out of the field, as soon as it is made, a cart load at a time, which they weigh, cart and all at once, by the help of ropes, or chains, and pullies, deducting the weight of the cart each time, until they have all their quantity.

Grazing cows.

The very beginning of *May*, from *Gad-desden*, and many other places in the chilterne country, are sent away old cows, and also guefs-cows (which latter are those that did not stand to their bulling last year) into the fertile vale of *Aylesbury*, to fatten in grazing grounds there at one shilling or fifteen-pence a week, for twenty weeks; for here their turf is so extraordinary rich and sweet, that, if the grass is ever so short, the beast seldom misses of getting fat, so they have water enough.

BOOK XIX.

Of LIVE STOCK.

CHAPTER I.

OF SHEEP.

SECT. I.

OF THE BREED.

Western.

THIS sort of sheep, of all others in *England*, we in *Hertfordshire*, *Buckinghamshire*, *Bedfordshire*, and *Middlesex*, account the very best, for soundness of body, for living on our short grass, for folding to dress our land, for fattening on turnips, for suckling house and grass lambs, for driving to and from our fields and commons, for not straying, and for yielding the very best staple of wool: It is for these valuable good properties, that these sort of

sheep are chiefly bought up for the use and service of farmers living in the aforefaid counties; and which are the means of employing many persons, whom we call sheep jobbers, to buy great numbers of them, in *Dorsetshire*, *Wiltshire*, and *Hampshire*, and bring them to particular farmers, and into our markets for sale; a chief one of which, is that of *Tring*, a market town, lying about thirty miles from *London*, and three from *Gaddeſden*; where, on every *Friday* during the spring ſeaſon, there generally is great choice of the larger and ſmaller ſort of horned weſtern ſheep, that have all white faces, white and ſhort legs, broad loins, and fine curled cloſe wools. The ſmalleſt ſort of them ſuits the conveniency beſt of thoſe farmers who have the ſhorteſt bite of graſs, and the largeſt for thoſe that have more: but the ſmaller ſort is moſtly coveted by thoſe farmers that feed them on, and fold them from commons: The ſame for feeding and fattening them on turnips, for that theſe ſmaller ſort, with their thin lips and narrow mouths, will not only bite and live on the ſhorteſt graſs, but will alſo ſcoop deeper into a turnip than a larger one can; and therefore will feed and fat ſooner than larger ſheep that have thicker lips and broader mouths.

It is theſe ſmaller ſort of weſt-country ſheep, when fattened, that furniſhes a butcher with thoſe
ſizeable

sizeable joints of mutton, that best answer the service of a private family, who find their conveniency best answered in having the pleasure to enjoy a hot joint of meat every day at their table; when a larger joint would incommode them by more than one means. These excellent western sheep are many of them bought up in *March* and *April*, because our rye, our turnips, and our cole or rape, in *Hertfordshire* particularly, generally hold out to feed them in these two months, which gives us the greater opportunity to buy them cheaper now, than we can afterwards when there is plenty of grafs. And as, in *Hertfordshire*, most of our fields lie inclosed, these western sheep that are of the horned sort, are more agreeable to us, than the poled or unhorned sort, because these horned sort cannot break through hedges like them, nor are they so inclined to do it, as the hornless sort are; by which means they preserve their wool on their backs, when the others lose much of it.

West-country sheep, that weigh about eight stone when they are fat, I call the smaller sort; those that weigh about ten stone, when they are fat, I call the larger sort. West country sheep are certainly the most tender dams of their young; and the *Dorsetshire* sort exceeds for frequently bringing twin lambs, which is a considerable advantage to both the grazier, the

house-suckling farmer, and, indeed, to all others, concerned in breeding, and making a profit by lambs: but this sort of advantage is mostly on the side of those that suckle house-lambs, as I intend by and by to give a very particular account of. Wherefore those farmers that live in *Hertfordshire*, *Buckinghamshire*, *Bedfordshire*, *Middlesex*, *Surry*, and *Kent*, and would be masters of a true breed of sheep, for folding, fattening, and breeding lambs, cannot have a better sort.

Hertfordshire.

This sheep is generally of a larger size than the west-country sheep, yet not so large as the *Oxfordshire*, *Leicestershire*, or *Lincolnshire* breed. It is a horned sheep that has black spots on its face and legs, or what we call speckled; is a hardy profitable sheep, but not quite so well qualified to get a living on a very short bite of grass on commons, as the smaller west-country sheep are; nor is their wool so good; therefore they are mostly kept by those farmers who have not the conveniency of feeding sheep on commons, but are forced, for this reason, to keep them always within ground; and where they do this, their profit lies in breeding and fattening lambs on clover or ray-grass, or trefoile, and on their fallow grounds. After their lambs are here fatted and sold off, they begin to fold their
ewes,

ewes. Many of these grass-fatted lambs are bought by the butcher in *May*; most of them go off by *Midsummer*, and then our farmers begin to fold the ewes in fair weather, every night till near *Allballontide*. These *Hertfordshire* bred sheep, when thoroughly fattened, may weigh, in neat mutton, about sixteen stone, at eight pounds weight to the stone.

Oxfordshire, Leicestershire, and the Lincolnshire sheep.

Oxfordshire breeds many pole hornless sheep, that are larger carcassed than either the west-country, or *Hertfordshire* sheep. There are likewise many of these pole sheep brought up, fattened for sale, to the great *Smithfield London* market, out of *Leicestershire*, and *Lincolnshire*, and *Cambridgeshire*, that are the biggest sheep in *England*, but always cut a very coarse hairy wool; in *Lincolnshire* especially, in their marshy and fenny lands, they breed the longest legged, and largest carcassed sheep of all others; and although their legs and bellies are for the most part bare of wool, yet their fleeces carry more wool on them than any sheep whatsoever; for their pelts, when well furnished with wool, and sold to the butcher a little before shearing time, fetch two shillings, or two shillings and six-pence a piece; and when fattened, some of their

their carcasses will weigh very heavy: But their meat is much coarser grained than that of smaller sheep; and their joints too large for small families eating. These great ones are also unfit for folding land with, because they would be too long filling their bellies on a short bite of grass; and because their heavy carcasses cannot bear frequent driving to and from the field without suffering much damage, yet are the most profitable sort of all others, for those graziers who occupy rich vale grounds; for here they have nothing more to do than to feed, lie down, and fat on their fertile earth; and this they generally do with great expedition, because their grass is of such a fattening nature, that it will feed and fat an ox, when our best meadows and pastures cannot do it in our drier, higher, chiltern country.

And although they may, by long droughts, or by stocking their vale ground with too many cattle, be, in some measure, deprived of a long bite of grass; yet, when it is at the shortest, it will support and keep not only large sheep, but even oxen from falling away in their flesh, when our hilly grass would starve them: which valuable quality I impute to the rich marly quality of their surface stratum earth, as it must be impregnated with more nitrous salt and sulphur, than our hilly earth is, because their land lies

near

near the warm springs, and low enough to be much out of the power of being greatly hurt by the chills of cold winds; when our hilly, high, exposed grass grounds, are situated so far from springs, that they are more hungry, more cold, and less fertile than theirs.

It is these large pole sheep that are the more beneficial to graziers, as they fat the sooner for having no horns, because the nourishment that should go to the horns is employed in fattening the carcase. Not but there are great numbers of small pole sheep as well as great ones; and many such are kept both by hill and vale farmers, for folding their ground to a good advantage; and indeed they are the very best sort of all others, for getting a living beyond most sheep; and for breeding, suckling, and folding, were it not for one grand ill quality that most of them are possessed with; and that is, by their being exceeding prone to leap over stiles, hurdles, and even low gates; and by their breaking into, and getting through hedges, sometimes to a farmer's great damage, because such sheep are apt to learn others of the horned sort to do the like, and thus cause a whole flock to get into, and ruin a whole field of corn in a few hours time; for a pole sheep can easily make the first gap in a hedge, when a horned sheep cannot, and thereby encourage others to follow.

Hence

Hence it is that some of my neighbours, as well as myself, who keep some of these smaller sort of pole sheep, for the sake of their thriving better than horned sheep, and for their carefully looking after their good lambs, are sometimes forced to couple some of the more straggling ones, to prevent their being such leaders to others; for their straggling is a more than ordinary dangerous fault, because it not only may be the cause of a whole flock breaking out of a field, but likewise to cause ewes in lamb to cast them. And so apt are these pole sheep to break out of a field, that if a man stands but twenty poles or perches off them, some of them will break through a hedge; so that it is a difficult thing to confine these hornless sheep within bounds, unless a shepherd is continually overseeing them; therefore are unfit to be kept by any farmer who occupies inclosed fields, and keeps no shepherd.

But to return to the large sheep: I have further to add, that a large sheep will not rot so soon as a smaller sheep, and therefore some of the foresighted vale farmers refuse to keep the *Welch*, or other small sheep. It is true, that when a small sheep is lost by the rot, the loss is not so great as when a larger one dies by it: but, considering that a small sheep rots sooner than a large one, the latter is preferred for being kept

as store, as well as for fattening sheep. But when I mention large sheep on these accounts, I would not be understood to recommend the largest pole, or the largest horned sheep for the vale fold: no, the sort I here mean, is that between the small *Welsh*, and the largest *Lincolnshire* breed.

Welsh and Scotch.

I am now come to write on the hardiest sheep that are for living in a cold country, and any where else, on that short bite of grass, where a large sheep would pine and starve, because these sort generally come from mountainous feedings, therefore no sheep will live better on downs and commons than these; and for these reasons they are brought up in great numbers out of *Scotland* and *Wales*, into the southern parts of *England* for sale, where they are bought by some farmers; for these are not the choice of many, because they are apt to straggle and run away if there be no shepherd with them, and many of them to be surfeited and subject to the scab, and stunted by long drifts, which discourages most of our *Hertfordshire* and *Buckinghamshire* farmers from buying them; yet, for some good qualities that belong to them, they are preferred by others, as their being a small, short, knotty sheep, that come from the poorest living, and thrive and fat presently for the butcher, when they are fed in
our

our southern country on a full bite of grass: and if they are fed on the excellent lady-finger, and two other sorts of natural grasses that should grow together, by sowing their neat seeds free of all weeds and other grasses, they will become the sweetest of mutton, particularly for a private family's uses, who delight to eat the least and finest sort, which some, I know, so esteem, that they will eat it near as soon as venison; and accordingly give a butcher his own price, when they can be assured the mutton is young and sweet; for, by being thus fed on a delicate grass, it may be altogether as good as that famous and best sort, fed on *Banstead Downs* in *Surry*.

It is true, as I have just observed, that when, by the inclemency of weather, the grass of vale grounds is corrupted and tainted, these small short-bodied sheep, as I said, are more apt to rot than larger sheep; yet even this grand danger may easily be made a trifling one, where my infallible cheap receipt to prevent the red water or rot in sheep is known and duly applied. For it is chiefly on this account that many refuse to buy them, as being ignorant how to prevent these maladies; if they were not, I know that thousands of them would be kept in vales where they are not, not only for their convenient living on a little meat, but also for their carrying dung into a fold over their poachy, wet, dirty land,

land, without sinking so deep into it, as a bigger heavier sheep must; and for the less loss that a farmer may sustain, if they die by the red water, rot, or other accident: which leads me to publish the good conduct of J—— B——, Esq; who, having a true notion of the value of *Welch* sheep, took the follow cheap method to come by them, viz.

A gentleman, in *February*, 1746-7, sent and invited me to his seat, situated in a fine park, on a dry high ground, which gave it a delightful prospect; and being a person of penetration, a studier of improvements, and an encourager of arts and sciences, fell in with a right notion of laying out money, in purchasing a parcel of *Welch* sheep, for the sole use of his own large family; because he knew where to buy them found, cheap and of an agreeable size, for feeding and fattening them on a farm that had lately fell into his hands, by the ill management of a tenant: accordingly he sent his bailiff into *Wales* to buy him a flock there, but when he came here, it happened to be a little before sheering time, when they were so indifferent of selling them, that he would not give them their price, and came home without any, because here they set too great a price on their wool. However, while he was there, he was informed of the right place and time to buy them cheap, and that was
at

at *Bishop-Castle* fair in *Shropshire*: and to this fair he was afterwards sent, where he met with great choice, and bought a flock of pretty sizeable sheep, that were full-mouthed, for between five and six shillings a-piece; which being brought home and kept in good feed, were fattened, and killed for this gentleman's family uses all the year, as his occasions required. And thus he was always sure to eat a delicate, sweet, sound piece of mutton, in the cheapest and best manner, free and clear of all over-heated, surfeited, unsound flesh; which, by too hasty, and too long drivings, fall to many butchers lot to kill. And so pleased was this gentleman with this his new way of furnishing himself with the best of mutton, that, when I was at his seat, I was told he designed to lessen the number of his deer, and increase the number of his *Welch* sheep, by grazing them in his park; and that they might be fed and fattened here on the best grass, for producing the sweetest of mutton, I furnished him with such natural grass seeds as would truly do it, by sowing them on, and amending his old sward, according to those particular directions I gave him. And in this gentleman's ground it was that these *Welch* sheep were kept safe from straggling, not only in his park, but also in his inclosed fields, and this without the constant attendance of a shepherd; because they

they had always a bellyfull of meat allowed them, and his hedges duly kept up in repair, through which, as they were of the horned sort, they could not pass.

Great numbers of these *Welch* sheep are brought every year into *Essex*, some without, and some with lambs by their sides, for exposing them to sale to plough farmers and graziers; the latter of which sort, buy them chiefly to fat in the salt marshes of this country, for here there are many thousand acres of this sort of land, that feed and keep sheep sound with the greatest expedition. And as they are here safely confined by their large watery ditches, they are prevented straying, and thus presently made fat; for where these sort can make their escape out of inclosed grounds, some have strayed to their being quite lost, as the following story makes out.

There is a story current in our country, of a black *Welch* sheep that had a face streaked like that of a badger's; and being brought up among others into *Hertfordshire* for sale, it was bought by a farmer, who soon lost it; for it was afterwards proved that it returned home into *Wales*, because it was brought up in a *Welch* flock a second time and returned as before: that being brought up a third time and sold, it was then discovered, and proved to be the very same

sheep that had been so often sold and bought, to the astonishment of many.

A *Chiltern* farmer, who has much open field land belonging to the farm he rents, bought in a parcel of *Welch* sheep to fold, but before he could rightly bring them to good behaviour, his shepherd was at abundance of trouble in breaking them to it; for, as their bodies were very small, they would get through the floats of the hurdles, or leap over them, and learn others to do the same; and by this would get into the green corn, run away, and could be hardly confined in the fold; for they were so wild, that they would endure much lugging by a dog before they would yield to discipline: for as these, and *Scotch* sheep are bred and fed at their full liberty on mountains, it is contrary to nature to be confined. Wherefore they are the less fit for folding, and mostly fold, as I have observed, into *Kent* and *Essex*, to farmers, for fattening them in their marshes; for here they are confined by deep large ditches, and always under a full belly of grass; if they stay any where they will here.

Turkey Sheep.

The *Turkey* sheep is of the large heavy sort, and the more so, because their broad tails are of a considerable weight. It is reported, that one of their tails has weighed fourteen pounds and a half, and that the whole sheep was sold for three pounds.

pounds. I have heard of a gentleman, that lives within twenty miles of *London*, who keeps about thirty *Turkish* ewes, and a *Turkish* ram; that the ewes were all poled ones, but the ram was a horned sheep. All of them had broad tails, with white fleeces, speckled with black spots, and mottled like a leopard; but their wool of a very coarse nature, for it is long, and, by some, said to be the worse for their coupling with goats, which makes it still more hairy.—A gentleman in *Hertfordshire* kept three or four of these *Turkey* sheep, and when they were observed going to ram, he had their tails sewed up, for one of their tails was so broad and heavy, that it weighed eight pounds; and one of their lambs, at sheering time, weighed sixteen stone alive. This same gentleman was very curious in collecting the largest sort of beasts. He sold two *Hertfordshire*-bred ram-lambs for forty shillings a-piece.

The Runney Marsh Sheep.

This marsh has those valuable qualities in it, that I never knew any other by sight, nor character, endowed with the like. Some think it was formerly a forest, because trees have been found covered in it, but destroyed by the breaking in of the sea, and since recovered from it; is twenty miles in length, reaching from near *Hythe*, in *Kent*, to *Rye*, and beyond it in *Suffex*;

in breadth, ten miles, from *Appledore* to *Rumney*. Its soil is compounded of sand, gravel, and marl; it is situated about sixty miles in *Kent* from *London*, and lies lower than the sea at high-water mark, which obliges the proprietors of the marsh to be at great charge to defend it against the breaking in of the sea-water, as it often has done, mostly about *Dim-Church*. But now they are so artful and diligent, that, of late years, they have received very little damage. And although this marsh lies very low indeed, yet the ground is of such a nature, that when it receives a shower of rain, it presently discharges it; and is so fertile, that it maintains more sheep and oxen than perhaps ten times this quantity of ground would do of upland meadow. Here they keep most wether sheep; and as for their ewes, the lambs they wean from them they fold on the hills, and next spring bring them into the marsh to fat; for here sheep and lambs are not long feeding and fattening for the butcher, although they were stunted by poverty not long before: and so extraordinary rich is this grazing ground, that it not only produces sweet mutton to great reputation, but those sheep also of a large sort, some weighing thirty pounds a quarter, and carry on them a good close-curved wool, but not so good as some of the west-country sheep. They never rot here, unless it be by some extraordinary accident;

dent; for when the vales of *England* rot their sheep, these marsh graziers get the most money. When mutton sells for threepence per pound, it is said these graziers live well; and so it is a sign, if fine-built houses will shew it, for here is an uncommon sight of them.

S E C T. II.

OF THE MOST PROFITABLE STOCK.

When, and what Sheep to buy in for a Chiltern Farmer's greatest Profit.

WHAT I mean by the word *Chiltern* is, as the farmers take it to mean, a hilly, dry country, consisting of arable lands and pasture grounds, where is sown artificial grasses; as clover, trefoil, raygrass, sainfoine, turnips, &c. for feeding and fattening sheep, lambs, and other cattle; which are conveniencies that few vale farmers can enjoy. But dictionary authors define the word, as meaning a country under the influence of a chill air. Now some of these *Chiltern* farmers think it the most profit to breed their own sheep; others of them are of another mind, and think it the best to buy in all they feed and fat, in such a manner, as to have a fresh stock in every year to fold and fat; and, by this means, to have lean or store sheep come in,

and fat ones to go off, so as to bring in a constant profit. In this account therefore, I shall confine myself to writing on the practice of a *Chiltern* farmer, who buys all, and breeds none. About *Candlemas*, or between that and *Lady-day*, he buys in, either wether tegs, with two broad teeth, or three-year old sheep, with four broad teeth: if the first sort, he folds them the two following summers under a bellyfull of meat, that they may feed free of being stunted, thrive, and get flesh a-pace, even while they are folding; for thus they are under a constant preparation for fattening, by living chiefly in inclosed grounds, where they have plenty of clover, or other artificial or natural grass, green thatches, turnips, &c. Then, after two summers folding them, the farmer in the month of *August*, draws out and separates those wether sheep from others, that he designs to fat on his turnips, and puts them into his stubbles and after-pastures, there to graze and eat up the grass and weeds; by which they get so forward in flesh, that they soon fat on turnips, where they are fed on fresh parcels every now and then by a careful shepherd, till they are full fat for sending and selling them at *Smithfield* market. And as to the second sort, or four-toothed sheep, he likewise feeds and folds them under a constant bellyfull of meat, info,
much

much that they may be justly said (if he acts the prudent manager) to fat, in a small degree, under such their feeding and folding, but does not keep them longer than one year in all; for after their summer folding, he, according to custom, feeds them in his stubbles or pastures, and next in his turnips, till they are full fatted for a *London* sale. It is true, most folding sheep go on commons that lie near inclosed grounds every day, but then they do little else here, but air, stretch, and clean themselves; for what feed they get here is next to nothing, because they fill their bellies so well in the inclosures.

There are no sheep better to breed for answering the two profitable ends of the fold and the butchers, than the west country and the *Hertfordshire* horned sheep, because they are generally of a right size, the soundest of sheep, are hardy breeders, tender dams, and yield a valuable wool: a right choice of these very much concerns those farmers in particular, who keep ewes within ground for breeding and suckling grass-lambs, and folding them after their lambs are sold to the butcher: and the same a vale farmer, that keeps ewes for breeding and folding; for which purpose a ewe of two years old, that is in lamb the first time, is the right sort. And why I recommend these two sorts of sheep in refusal of

all others, is, because they commonly come off found layers of ground; the west country sheep from off their high dry grounds and downs; and the *Hertfordshire* from off inclosed, gravelly, chalky, sandy, and loamy soils, and off commons of the same nature. And because they are not apt to stray away, like the *English* pole, or the *Welch* or *Scotch* sheep, a breed from such sheep, by a right ram, may stock a farmer with a true bred profitable sort; and this the sooner, if the ewes bring him twin lambs, as many of these are apt to do. But avoid, as much as you can, the breeding of sheep by vale ewes, where they are suspected to come off rotten ground.

Chuse a ewe with wide shoulders, broad loins, deep bodied, short-legged, handsome-headed, with horns not too big; the west-country ewe with a white face, and white legs, and the *Hertfordshire* ewe with a speckled face: of either be sure she is a good coated one, I mean, that her wool has a full white curl; for there is more in this than many persons are aware of.

A close wooled sheep is not in that danger of suffering by the pelt-rot nor red water, as the shaggy loose-wooled one is; because when a sheep has such a close curled fleece on its back, the rain cannot make that lodgement in it as it does in a loose-wooled sheep; nor can the cold winds
have

have that power to enter and chill the body of the former, as it can the latter. A close curled woolly sheep, after a shower of rain, upon shaking its body, will discharge much of it, when a loose wooled one receives and retains it. This is an item of the greater consequence, because as the ewe and the ram is, so will the breed be; and an error in the beginning or foundation of a thing is of the worse nature, as it may have its effects on the breed for a long time after. And I believe I may affirm it for a truth, that thousands of sheep have been lost by means of the chill of rains and cold winds, particularly after they have been shorn; because their skin or pelt, at that time, is most exposed to receive and lodge them, as it has lost its woolly-covering protection; for the skin of this beast is the most spongy, and the most porous of all other skins whatsoever. And hence it is, that rains and winds have such a ready access to enter into, and corrupt the blood of this most excellent creature, which brings it under sickness or the fatal rot.

To make this the more plain, I have in the first place, to say, that in many parts of *Middlesex* and *Hertfordshire*, there are, I believe, more house-lambs suckled and fatted, than in all *England* besides; and, for this purpose, the suckling

suckling farmer is very curious in purchasing the very best *Dorsetshire*, and other sorts of west-country ewes; as knowing that upon this a chief part of his profit depends, in order for his having those lambs that will sell best; and these ewes are those that are rightly coloured, wooled, and shaped: for which reasons the suckling farmer is tempted to give the largest price, that he may have ewes with these good properties, and bring him twin lambs. Now these choice ewes, after they have bred and suckled house-lambs for about three years, are generally so worn out by constant breeding and suckling, that they sell them off to make room for younger and fresher parcels of ewes; and, in order to it, they drive these old ones to fairs and markets: Now it is these old suckling ewes, that some of our nice *Hertfordshire* farmers, make it their business to buy, for breeding a lamb or two out of each of them, in order to come by the best breed of sheep, for as these ewes were the culled ones of flocks, they are those that exceed others in goodness. Again, as these old suckling ewes are advanced in age, they have the largest bones and sinews, far beyond a very young sheep; and therefore the more capable of bringing strong lambs. I have bred the best lambs from my oldest sheep; and these suckling ewes are seldom so old, at their selling off, but that they will

will breed once, twice, or more: but all farmers that buy these sorts, should take this caution with them, which is, that they must not expect these sort of suckling ewes to feed on a common, or in any open field where they can stray away, without the close attendance of a shepherd and his dog; because, as they have always been used to feed, and been confined in full feed, within inclosed grounds, they will not stay on commons, or any where else, where they can stray from: for that these are an old cunning sort, that will find out the best living if they can come by it, and shift where a young sheep cannot, therefore will bring up her lambs in the best order; and after she has so done she may be fatted, and sold to the butcher for more than her prime cost.

The method that some vale farmers, and other vale men take to make the greatest profit of their ewes and lambs.

Few that I know of keep ewe flocks in vales; but that was rather too close an expression; for though I don't know many that do, yet there are, as I am informed, many that do keep ewe flocks in vale grounds, as in the vale of *Aylesbury*, about *Wing*, *Ascot*, *Solebury*, &c. and so undoubtedly in many other parts they keep ewe flocks, as thinking them to be more profitable than wethers; yet go into many parts of vales,
and

and there be those that think as much the contrary, and believe no flock of sheep pays them so well as a wether flock, as most or all do in the aforefaid vale, that live about *Cbedington*, *Mossworth*, *Puttenham*, *Abbots-Arson*, &c. Ewe sheep in vales, I must own, have a soft earth to travel on to and from a fold, and therefore are not so subject to suffer by the foot-rot, like those ewes that travel, on the same account, upon chiltern gravelly ground: yet, what is worse, both ewes and lambs are more subject to rot here than in chiltern countries. However the vale farmer ventures this; and when a rot keeps off for a few years together, as it sometimes does, they then get money by their ewe flock, both by selling some of their couples, and folding others. In this respect the vale is a sort of nursery for the chiltern country; for we chiltern farmers often buy couples, and wether sheep, out of the vale of *Aylesbury*, for the sake of their cheapness, and their better wool; for vale wool sells for two or three shillings a tod more than our chiltern wool does. Again, chiltern farmers sometimes venture, on a risque, to buy vale sheep and lambs, though we suspect they are touched with the rot; because when vale men are apprehensive of the rot, they are tempted to sell off their sheep and lambs at a low price, for fear of losing them quite; and we buy them in hopes they will knit
and

and recover, as many do that are not too far gone in the rot.

The method that a chiltern farmer takes to make the greatest profit of his ewes and lambs.

This farmer is a neighbour of mine, and one that rents a large inclosed chiltern farm, consisting of many fields of arable land, which every year gives him great opportunities to improve the same, in several branches, to a considerable profit, as his present worth sufficiently proves true. Now the branch of profit I am here writing of, is, I am of opinion, the chiefest of all his others, because by this he increases his flock of sheep in the cheapest manner possible. Secondly, by this he dresses his land with the best of dung, that produces the largest crops of corn, turnips, grafs, &c. Thirdly, by this he is making a constant profit of his lambs, of his sheep, and of their wool; for as he keeps a flock of about an hundred and sixty sheep, consisting of ewes and wethers, he every year breeds his own lambs, part of which he rears as store sheep for his fold, and most of the rest he fats and sells to the butcher. Those lambs he designs to keep for store sheep, are the ram sort, which he has gelt at a proper age; and as to his ewe lambs that he intends to sell, he keeps them sucking on their dams, in a full bite of trefoule,

ray-

ray-grass, or clover, till they are fat enough for the butcher, which they commonly are in *May* or *June*. The rest of his ewe lambs, that is to say, the largest and best of them, he always saves to make store sheep of them, which prevents him buying in any ewes at all; and besides those lambs he gelds to make store sheep of them, he buys in some wether sheep every year for folding and fattening them afterwards in his turnips; for this farmer has a good common to graze his sheep on, besides his in-grounds.

I know the farm of a yeoman very well worth eighty pounds a year, being an inclosed farm, consisting of gravelly, stony, and loamy ground, in which he sows turnips, clover, ray-grass, and trefoil grasses, that furnish his sheep with a full feed; for he has no common land that he can conveniently feed any cattle on, and therefore he is confined to feed and fat them within grounds, which to make the most profit of, he thinks ewe sheep pay him better than wether sheep, because the ewes bring him lambs, return him wool, fold his ground, and dress it by their dung and stale, and afterward fat for the butcher. Whereas, if he dealt in only wether sheep, he could only expect their folding, their wool, and their fattening; but by keeping ewe sheep he fats about sixty lambs a year, that he sells for about half a guinea apiece; and when he has not ewes enough of his own, he buys in more in lamb at

two years old, and breeds from them; then when their lambs are fatted off, he folds his ewes till *Allballontide*, and then separates the oldest of them from the rest, and fats them in his turnips for the butcher.

The conveniency and inconveniency of keeping a flock of ewe sheep.

As to keeping a flock of ewe sheep, I know of but few that do it in the vale of *Aylesbury*, where most of their ground lies in common fields, because here they cannot hope to farm well without the assistance of the fold, for which a ewe flock is somewhat improper; since it is well known that ewes cannot bear a long drift, nor live with so little meat, when in lamb, as a wether sheep can; nor are so capable of being folded so early and so late in the year as wether sheep are. In *Hertfordshire* there are two sorts of farmers that keep ewe flocks; one whereof are those that have not the conveniency of a common to graze them on, and therefore are obliged (as I have before observed) to keep them within ground, for making a profit of their lambs, and by folding them after the lambs are fatted and fold off. Here the ewes have the advantage of being free from that painful malady the foot-rot, which in many places both ewes and wethers are subject to. But those that are most subject to it

are those ewes that suckle house lambs, because they are obliged to travel several times a day to and from home; by which, as they walk through dirt, and perhaps over gravelly ground, they are more than ordinary liable to take up dirt and gravel in their feet, that eats into them, festers, and brings the poor beast under exquisite pain; sometimes to the loss of its life, if not timely relieved. And although this malady mostly affects those ewes that are constantly suckling, yet it sometimes befalls those that are driven to and from the fold among wether sheep; for many farmers, especially in the chiltern country, keep ewes as well as wethers in one flock, for good reasons; first, because in keeping some ewes among wethers, they bring a summer as well as winter profit; in summer, after they have lambed, and the lambs are big enough, many farmers fold both ewes and lambs among their wether sheep; others fat both ewes and lambs, that is to say, when both are fed in plenty of meat, and the lambs are fatted and sold off to the butcher, the ewes, that in such good keeping were getting flesh all the time they gave suck, they keep fattening on, till they are fit for the butcher; and thus a farmer makes a summer profit both of his ewes and of his lambs, and by the same is enabled to buy in other ewes from the west, or elsewhere, to bring lambs in
the

the spring season, and fold or fat them in the summer.

A farmer I am here writing of, lives within two miles of my house, where he rents a large inclosed farm, consisting of most arable land, and less meadow, and being one of the notable sort, he, at *Hempstead* fair, in *Hertfordshire*, which is always held on *Corpus-Christi* day, or three weeks before *Holy Thursday*, bought a parcel of western ewes forward in lamb; for they all lambed by the latter end of *August*; and fed both the ewes and their lambs in his meadow ground, where these tender dams and good nurses, soon fattened their lambs; for it happened to be a plentiful year of grass, insomuch that while the lambs sucked their ewes, the ewes and lambs fattened apace. The lambs he sold off to the butcher first, and then continued fattening the ewes till he likewise sold them to the butcher; so that all the ewes and their lambs were fattened and sold off by the latter end of *November*: and, as the farmer owned, he was well paid for his thus buying in, feeding, and fattening these ewes and lambs.

In frosty, or snowy, cold, or rainy weather, which mostly happens in *December*, *January*, *February*, and *March*, when our folding, or store sheep, generally begin and end their lambing, at such a time, a shepherd's skill and

care is tried, to preserve sick or weakly lambs alive, which, unless an excessive snow falls in the night, is the worst weather of all others for sheep to lamb in abroad, because the cold air, and rain withal, so chills the new-fell lambs, that many are not able to resist, but die on the spot before a shepherd comes into the field. It also sometimes happens, that, in very sharp frosts, when nights are very long, some lambs are frozen to the ground before they are found: But if they are not thus killed by the severity of cold, snows, or rains, many of the weaker sort of lambs (especially those that come of very young, or very poor half starved ewes) are yeaned very feeble and sick; so that, without timely assistance, they must die: in this case, as soon as such weakly lamb is found, both ewe and lamb should be brought out of the field, and kept in an outhouse or barn, for one, two, three, or four days, or more, as it is more or less in danger of dying, till it gathers strength to endure the open air. When this happens, or that snows hinder the ewe from getting her living abroad, we commonly give her cole, or turnips, or pease, or oats, or bran, in a trough in the open air, or under cover, with hay or pease-straw, for enabling her to maintain her lamb well.

A small farmer being owner of only three inclosed fields and an orchard, containing

in all about eight or nine acres of land; and having, besides, a right to, and liberty of grazing cattle on an adjacent unlimited common, he attempted to get money by breeding, feeding and selling sheep with their lambs. And, in order to it, he bought in some ewes, which he fed on this common during the summer season: and while this was doing, he ploughed and sowed a three acre inclosed field with turnip-feed; and a crop of hoed turnips he got, with which he proposed to feed his ewes and their lambs, in order to sell them as couples afterwards, and then to buy in a fresh stock for doing the like another year. But so it happened, that his chimerical scheme brought him under a great loss, for instead of getting money he lost a pretty deal; for when he came to feed his ewes, with their lambs, on the turnips, he gave them so few at a time, that some of his ewes died, with their lambs, by hunger, and others by sickness, so that it was thought he lost near half his flock, by thus over stocking his ground with more cattle than his land could well maintain. But this his infatuation appeared to be no wonder to his neighbours, who knew his avarice led him to pick thistles, and do such other servile work on *Sundays*, that even many of the worse sort of libertines would have been ashamed of. He has since

been on the losing side for several years, and is like to be so.

A farmer, living in the parish of *Giles Chaffon*, in the county of *Bucks*: the son likewise a farmer in *Hertfordshire*: both kept sheep on small farms. The father, as a sage senior, counsels his son to avoid keeping ewes all the winter, by telling him it was his opinion, that a ewe and her lamb, being kept all the winter for store-sheep, would eat as much meat as they are worth, therefore advised him not to do it, but to buy in full-mouthed or eight-toothed wether sheep, about *May-day*, (for you must know both these farmers lived in a *Chiltern* inclosed country) for folding them all the summer to dress the ploughed land, and thereby increase the bulk of his crops of grain, turnips, &c. and when his harvest is got in, then to give over folding them, and turn them into the stubble, there to let them feed and lie at their ease, in order to give them an opportunity to get flesh, and make them in a forward condition to sell to those great farmers who buy sheep about *Allballontide*, to fat for the butcher in turnips, or rapes, or both, the following winter. Now one reason why he advised his son to buy in full-mouthed wether sheep, in refusal of younger ones, was, because, as he said, these full-mouthed sort were cheaper than a younger sort, especially about that time of year, when most farmers buy in tegs
and

and thaives. A second reason was, that, as these full-mouthed wether sheep have been (as they generally are) wintered very hard, by their eating little else than straw, and being folded all the summer on the short bite, or feed, of what grass and weeds they could get on a common; when they come to enjoy a full bite of grass and weeds among stubble, and on the grass baulk of inclosed fields, and have nothing else to do but to live and feed easy, they will thrive very fast, and get into such good order of flesh, by *Allballontide*, that they will then sell for a satisfactory price, to those farmers who make it their business to sow large quantities of land, with turnips, or rapes, or both, for fatting wether sheep. In the next place, I shall give some account how a sheep and lamb may become so chargeable, for a farmer to keep as stores, that made this father farmer say, they will eat more than they are worth. To do this, I will suppose that the farmer folded the ewe in the summer, if not the lamb with her; but whether he did one or both, they both should have a better living than what a common affords, or else the ewe would want a due quantity of milk to maintain her lamb, and thus both would pine and become lean and stunted, or perhaps die in the winter, or spring, and thus bring the owner under a loss. But I will suppose that the ewe goes on well all the

summer season, and take ram in *August* or *September*, (the usual time for store ewes to take ram,) she then must be well kept the major part of the winter in good grass, in turnips, or rapes, and with the best of hay, else she cannot breed her lamb in perfection. Her last year's lamb must be also kept extraordinary well throughout the winter, on grass, or turnips, or rapes, and with some of the best of hay, else it will prove a stunted one, and perhaps die for want. But supposing both ewe and lamb goes on well throughout the whole winter, yet as both must be kept extraordinary well, in plenty of the best meat, where is the profit? Or, whether it be not a just query, if the meat is not worth all the money the ewe and lamb will fetch, if they were to be sold in the spring?

S E C T. III.

OF FEEDING SHEEP.

*Summer Feeding.**Feeding and fattening Ewes and Lambs in Clover and Trefoil, &c.*

IN June, clover, trefoil, and ray-grass, are in their greatest heart; and as their stalks are large and very succulent, they yield abundance of rich juice to suckling ewes, that creates great quantities of milk in their bags, which feeds and fatts lambs with the greatest expedition; and was it not for the dangerous hoving quality that attends clover-grass in this month, it would be the most profitable sort of all artificial grasses. On this account, the suckling ewe escapes better than the ram and wether; for these never hove so soon as they; yet I cannot say they are free from this danger; because, if due care is not taken at first to give them their belly-full of natural grass, just before they are turned into the clover-grass, it may likely become fatal to them. Now to prevent this misfortune, our most judicious farmers sow trefoil amongst their clover; and some add ray-grass, which in a very great degree secures the sheep and lambs from hoving: but where trefoil grows in an intire crop, the ewes

and lambs feed in more safety, and fat at a great rate; because this grass yields a very pleasant juice, that produces an excellent milk, and a great deal of it; insomuch that both ewes and lambs will fat here faster than in any other artificial grass, and become very sweet meat, provided they are put into the field of trefoil, while it is in its young growth: for when this grass is old, its stalks and yellow blossoms get rankish, and tincture the milk of the ewe, and the flesh of the lamb, with a little bitterish taste. This delicate grass-feed I sow every year in its black hull, and not in naked feed; for, in this condition, it will keep sound longest, either in or out of the ground.

Baiting Sheep,

In *June* the grass on commons springs apace, and generally affords a good bite; but, where a common is not stinted, or the number of sheep limited, they are then apt to keep it always bare, and many times obliged to go to fold with half a belly-ful, and then the hunger, rot, or other misfortunes often ensue. For which reason a good husbandman, who has inclosed fields near a common, will always be provided with clover, or other artificial grass, ready for supplying this defect; and after the sheep have fed till about one or two o'clock, will take them
off

off the common, and bait them (as we call it) on such grafs, till they be drove to the fold; by which means they will dung and stale a great quantity, always keep half fat, and be better enabled to withstand diftrefs; and for which purpose I commonly fow clover, or thetches,

Winter Feeding.

Turnips.

Six large wether-sheep, or eight small ones, may be put into one acre of turnips, to fat; but it must be a good acre of them that will do this, and good management withal; for the sheep must be shifted in time, by removing a row of hurdles, cros the field; and the turnips, when scooped even with the ground, must be pecked up, before they are too much trodden, stained, and rotted.

If wether-sheep are taken in to fat, the price is four pence a head per week, and no more for a ewe with its lamb. Some wethers will fatten in twelve weeks, others in sixteen, according as they are, when they first go in.

After a very hard long frost, turnips when they have thawed, are apt to rot, stink like carrion, and be of a poulch.—It was the saying of an old dealer in sheep, that he would rather give five pence a head a week, to feed and fatten his sheep on young turnips, than two pence a week
on

on old turnips; because sheep thrive as fast again on the first, as they do on the last.

A neighbouring farmer's practice was, having only ten sheep to fatten, he fed them in a large fold a night and a day, and then removed it, and shifted the sheep to a fresh bite, and so on. Now, as these fat sheep were daily shifted, his store sheep followed in another fold, that was also removed every day, to eat up those offal turnips the fat sheep left, and which were daily picked up for them; and thus, by his double folding, he generally had the best crops of barley in our parts. Others will pull up the turnips, and give them in a fold every day; and, if they are not too large, the sheep will eat them clean up.

The price of wintering store-sheep is three shillings a head, and two shillings and six-pence for a lamb, from *Allballontide* to *Lady-day*.

In case a farmer feeds his sheep by wide hurdles, as we do almost all over *Hertsfordshire*, in the vale of *Aylesbury*, and most other places in the north, as soon as he has removed his hurdles, to give the sheep a fresh parcel of turnips, he pulls up all those turnips that grow in the breadth of two feet on the outside of them, and gives them to the sheep to eat amongst those standing ones within side; likewise, that he draw and pull up all those turnips, that grow within two feet of the inside
the

the hurdles, which he is also to lay among the standing or unpulled ones within side, in order for the sheep to eat them all. Now the reason for all this is, that, by pulling up those turnips that grew within two feet of the outside of these hurdles, the sheep are in a great measure prevented from striving to put their heads between the floats to come at them, which they are very prone to endeavour for getting a fresh bite; and this the more, when they have almost eaten up those within-side. Also, by pulling up those turnips that grew within two feet of the inside of the hurdles, the sheep are prevented walking, trampling, and spoiling them, which they would have done, by going to and fro, in search of a place in the hurdles to get through, after a fresh bite of turnips.

When Sheep are to be drawn out of the Store Flock, for fatting them on Turnips.

As soon as harvest is got in, we commonly draw out, and separate, so many of our fix-toothed and full mouthed wether-sheep, from our store flock, as we intend to fat for sale; in order to which, we turn these sheep, so selected, into our stubbles, there to feed, and get some flesh on their backs, against the time that our turnip crops are ready to receive them: and here it is, that after these same sheep have been worked
hard

hard the foregoing part of the summer, by perhaps feeding all that time on the short bite of a common, and by being folded every night, they may now live at their ease, and get meatish against turnip time, by eating the grass that grew from mowing time on the baulks of these inclosed fields, and by feeding on the weeds that come up amongst the corn. Here also may be turned into the stubble any six-toothed barren ewes, or full-mouthed ones, in order to prepare them with the wether sheep, for their quicker and better fattening on turnips; or you may do the same by four-toothed wether sheep, as some, but very few do, and those that do fat such young sheep, do it on account of their meeting with a better market than ordinary; for there be some particular butchers in *London*, that are constantly furnished with these sort, to please their nicest and best customers, who grudge not a half-penny a pound, to give extraordinary, for such young mutton.

The prodigious number of sheep, fatted every year on turnips and rapes, shews the great improvements that are made by sowing fields with their seeds, but more especially with those of turnips, as the counties of *Cambridge*, *Suffolk*, *Norfolk*, *Essex*, and *Hertfordshire*, &c. have truly experienced to their great profit. Wherefore that farmer, whose ground will admit of this

turnip improvement, and does not endeavour to obtain it, may be justly accounted what we call an afternoon farmer, or one that does not make the best of his ground, as those do who get full crops of these serviceable roots, by sowing the seed of them a little before and after *Midsummer*, and then the turnips will be grown big enough by *Allballontide* to turn sheep into them: for at this time of year, or a little before it, our *Hertfordshire* farmers begin to put those sheep into their turnip fields, that have been feeding, for this purpose, in the stubble ground, and generally take particular care to dock, or cut off, a bit of the tail from each sheep, about a week before they thus turn them into their turnips, by cutting so much off their tail, as to leave the rest of it but a handful long, and do nothing to the wound, because at this time of the year the fly can do no mischief, and the blood will stop in this part of itself. Now one reason why they dock their sheep, is, that it makes their bodies look shorter and plumper, than if they had all their tail on, and therefore are thought to sell the better at market: another reason is, to prevent their suffering by an overflow of blood, which the rank feed of turnips is very apt to produce; for notwithstanding this precaution, many sheep have died by such a plethora. But to begin with the management of sheep in turnips:

to this end, a farmer provides himself with a sufficient number of hurdles, nine feet long each, that are to inclose such a parcel of turnips, as the shepherd thinks the sheep will eat, to the most profit of his master; which is to hurdle out no more at a time than they will eat fresh, or almost, or quite up; for if they were to have too great a parcel given them at a time, they would bite and scoop the upper part of many, and leave the rest to damage. Here then they are to feed on a parcel of hurdled-out, fresh turnips, till they have eat them, which they will do by their orts being picked up, as they are now in a hungry condition, at their first putting in. When this is done, the sheep must be removed into such another like parcel of hurdled-out, fresh turnips, at the contrary end of the same field, and when they have fed these off, they must be removed a third time, to another fresh parcel, next where they first began, and so on, feeding alternately at one and the other side of the field, till all the turnips are eaten off.

If sixty sheep are fatting, we remove the hurdles once a week; if an hundred sheep are fatting, twice a week. Thus the fatting sheep will go on feeding and eating off the turnips till near *Christmas*, without making much orts. Then, or before, it is, that those store sheep, that went into the stubble field, after the fatting sheep

sheep had left them, must be brought into the turnip field, to follow and eat up the orts of the fatting sheep; and when they have done it at one end of the field, they must be removed to the other end, and so on, following the fatting sheep, till all the turnips are eaten off.

For after the fatting sheep have been in the field till near *Christmas*, they will become dainty, and refuse the picked up orts, which the store sheep will be glad of. By the time of *Christmas* it is a chance if the first forward sheep, in flesh, are not fat enough to go off and sell at market; for this often happens to be the case. Then if the farmer has plenty of meat, the remaining sheep will have the better feed, and be full fat by *Candlemas*, or in a week or two after; for most turnip sheep go off fatted about this time of year, for giving me and other farmers an opportunity to give the same ground only one ploughing, and harrow in wheat or barley; and we often have fine crops, of both grains, by this very means, for a full crop of turnips will hold a parcel of sheep feeding long enough for their dressing and enriching the ground, by their dung and stale, by which, with an addition of a thin coat of stable muck, laid over the turnip ground, I had most admired crops of wheat and barley, in the year 1747, notwithstanding I sowed one of my fields with wheat seed, on the 20th day
of

of *March*, on only one ploughing and harrowing in the feed, because my turnips were not eaten off soon enough to do it before: for in this management the drill husbandry could not be admitted, as the surface is caked by the tread of the sheep, nor would time allow so many ploughings, as was necessary to bring the ground into a tilth fine enough for drilling it. As to fattening of sheep on cole or rape-plants, as yet it is very little practised in *Hertfordshire*, because these will not grow so well in a dry hilly country, as ours is, as they will on flat, wetish grounds; therefore in *Lincolnshire*, in the isle of *Ely*, and in such places, cole, or rapes will grow in a great degree of rankness, and feed sheep fat in a little time, but its seed gives their great poll sheep a rankish taste; and as they go into their cole or rape grounds about *Michaelmas* time, they generally come out fat, and are sold at *London*, before our sheep can be fat for sale, in our turnip grounds.

The method practised by a Hertfordshire Farmer, to enrich his chalky earth, by feeding his fatting Sheep, and his Store Sheep, at one and the same time, on Turnips, and for preparing the same for a Crop of Wheat to grow on it the same year.

This farmer renting, among others, an inclosed field, whose soil is a whitish, or chalky loam,

loam, which being a perfect dry earth, he thought it entirely good management to feed off his turnips very early with his fatting and store sheep; in order to sow wheat on the same land the same year; and to do this in a husband-like manner, he began with eating his turnips off, by two folds, in the month of *October*, one for his fatting sheep, the other for his store sheep; the fatting sheep went on first, feeding on a fresh parcel of turnips every day; by folding out only enough for them to eat in that time; the store sheep, which were six times more in number than the fatting sheep, followed in another fold, which was shifted every day; as well as that made use off for the fatting sheep, and in this fold his store sheep eat up all the orts that the fatting sheep left; and thus he daily proceeded, feeding his fatting sheep, and his store sheep with turnips till they had eat up all that grew in the field; by which excellent method he double dressed his land; and brought it into such heart, as made of this naturally poor, chalky ground, a rich soil, for sowing wheat thereon the same year, as this farmer did; for in such a dry earth we have full liberty to sow wheat on it, till the latter end of *February*; and what likewise deserves regarding in this turnip management, is, that this husky, dry, short, chalky earth, agrees better with fold-dressing, than with any other dressing whatsoever.

A proper composed trough meat, is not only necessary for fattening sheep sooner than if they were fed on bare turnips, but also for keeping them from sickness, while they are feeding and fattening on them, and for causing their flesh to become the sweeter, and sell for the greater price. Again, dry trough meat is absolutely necessary on two other accounts: First, when turnips are got hard and stringy, for this is their case when they are old, or when long dry weather happens before winter, then it is that sheep cannot thrive much on their feed; for a dry corky turnip is as bad as a frozen, rotten one to sheep, because the first is so hard, that the sheep eat them with much labour, and are longer digesting them, than if the turnips were young and firm. A corky turnip will boil reddish, and are unfit for eating; and if they are not fit for man, they are not fit for beast. Secondly, when sheep are fed on turnips that grow on stiff, starchy, wet ground, their meat seldom does them much good, unless a proper trough-meat is constantly set by them as an antidote for preventing those evils, that such turnips and ground may be the cause of.—I know a great farmer that keeps a very large flock of store sheep, consisting mostly of wethers, and some ewes; and why he keeps some ewes is, because he will have a summer as well as a winter profit;

profit; for after he has fatted his number of wethers, in the winter, on turnips, he fats some of his ewes, with their lambs, in grass, and so has almost a continual profit.

A shepherd in the vale of *Aylesbury* says, that about *Wing*, *Askot*, and *Stuteley*, where is some clay, and some sandy land, and where they seldom have any turnips, they fat their sheep with grass and hay and trough-meat; for which purpose, after they had eat off most of the grass among the stubbles, and in other places, some time in *October*, he drew out those sheep he designed to fat, which were forty in number, and put them into a six-acre meadow, where some good grass had been reserved for them; here he had three trough, seven feet long each, made with two boards each one, in which he daily put oats roughly grinded, as they come from the mill, hulls and meal together, mixed with some bran; and thus it became a fattening trough-meat; this, with a rack of fine hay, placed near them, fattened most of them in about — weeks time for the butcher.

A farmer that keeps a large flock of sheep for folding and dressing his ground, generally has every year some broken mouthed, and other old sheep, to fat for the butcher; and to do this in the best manner, he takes care to feed them among his stubbles after harvest, to give them an opportunity

of getting some flesh on their backs, preparatory for their being the sooner fattened on turnips afterwards; then, in *October*, he first hurdles a piece of turnips out, and puts these broken mouthed, and old sheep, into them, in order to feed and fat them for the butcher; and that he may do this in the most expeditious manner, he first provides himself with oats and bran, and some barley-meal for a trough meat; and having this ready, and a field of turnips also ready, near the farm-house, he brings these sheep every night out of the turnips into a covered place at home, and there feeds them with this trough meat till morning, when they are drove into the turnips: then when these sheep have eaten the best part of the turnips, he removes the hurdles, and gives them a fresh piece of turnips; and when the former offal turnips are picked up, he lets those lambs feed on them, which he bought in before last harvest, for about five shillings a piece; and after the lambs have eaten what they will, he, at last, brings in his store sheep, which being kept in a hungry condition, gladly eat up all the refuse pieces of turnips clean; and thus our farmer fats his old sheep, and feeds his lambs and store sheep, to the dressing and enriching of his ground. But had his field of turnips been more distant from the house, the drift would have hindered their fattening.

The turnip is a much sweeter plant than the rape or cole, and therefore produces a better tasted mutton and lamb; yet even this admits of various observations; for as a turnip grows on a sweet or rank soil, or, as its growth is forwarded by a pure or impure dressing, or as the sheep or lambs are fed in a young or old age of the turnip; or if the turnip is sound or unsound while they feed on it: I say, all these, and more circumstances may alter the flesh of the sheep or lambs for better or worse, that feed and fat on them; yet experience proves that sheep or lambs fatted in a turnip field, may be furnished with such a sweet flesh, as is little inferior (if at all) to grass-fed mutton and lamb; and this in so cheap a manner, as hardly admits of an objection to the doing of it, as I shall make appear by and by.

One *Daniel East*, a poor man, that lived about a quarter of a mile from me, told me, on *July 24*, 1747, when he was above ninety years of age, that he once bought a score of the *Derbyshire-Peak*, small breed of sheep, that carried on them extreme fine wool; and were of so hardy a nature, that they would live in winter on the bite of furze. He says, he kept eighty sheep one hard winter, on *Barkhamstead* common, and they did not stand him in above five shillings in hay, because they eat furze, when they could not come

at grafs. Furze (he faid) is moft tender till *Midsummer*, and that fheep will eat it at one year's growth, much better than when it is two years old, becaufe it is then fo much the harder. His flock was compofed of ewes and wethers.

Two farmers that live in the chiltern country of *Hertfordfhire*, and very near one another, keep each a very large flock of fheep, and fow many acres with turnip feed, in their inclofed fields, every year. One of them, in the winter time, baits his fheep in his turnip field every day, and at night brings them into his large yard, well littered with ftraw, wherein ftand feveral racks of one fort of ftraw or other; and thus he makes, it is thought, an hundred loads of dung in a year. The other thinks it better husbandry to feed his ftore fheep on turnips, and fold his dry ground all the winter. Others, that have no turnips, will drive their flock to a common in the day, and bring them every night into the ftraw yard to feed and make dung.

Ivy.

Ivy is an evergreen vegetable, that carries on it many fubftantial green leaves throughout the year, and is to be found both in chiltern and vale countries, growing about the bodies of trees, againft walls, and againft pales, &c. and in
procefs

process of time, will acquire stalks as big as a man's leg. These medicinal leaves being thus to be had at all times of the year, are those that will increase milk in ewes beyond many others; for which reason, some farmers send their boys about the country, or shepherds go to find out some of this necessary food for feeding their ewes with them, to increase their milk in any weather whatsoever: for these ivy leaves may be got in snows, frosts, and at all times, without molestation or hindrance from the owners of them; and are of such an agreeable nature and taste, that all sheep will greedily eat them; and are not only valuable for increasing milk in ewes, but are likewise very healthful to all sheep that feed on them, as I intend to give a further account of hereafter, when I write of the rot and red-water.—I know a certain farmer that lives on the edge of the vale of *Aylesbury*, who employs a boy most part of the spring-season to find out and gather ivy leaves, for feeding his ewes with, to increase their milk, and for supplying the defect of grass, turnips, or rapes.

Trough Meat.

In the first place, there must be a chaff-box, or engine provided for cutting chaff; and the chaff must be made by cutting clover-hay: the clover being thus cut ready, it must be mixed with an equal quantity of malt-dust: the paler

and fresher the dust, the better it is : now this mixture of chaff and malt-dust, must be put into the crib, in such quantities, and as often as the shepherd, in his prudence, shall think fit ; and if he finds the sheep get into the crib, and stale and dung among the meat, it is only nailing some bits of sticks across the crib here and there, and it is prevented.

This excellent food being luscious in taste, and dry and hearty in nature, tempts sheep to feed greedily on it ; and when they have so done, they as greedily eat the watery turnip, or rape ; so that one becomes a sort of sauce, or provocative, to feed on the other, and both, consequently, tend to fatten them with the greatest expedition, far beyond the feed of the turnip, or rape alone. But this is not all, for the flesh of sheep thus fattened, will eat much firmer, sweeter, and be of a more wholesome nature, than when the beast feeds solely on the crude turnip, or rape.

Again, when sheep are fattening solely on turnips, they are seldom less than twelve or sixteen weeks fattening on them ; whereas, if this crib, or trough-meat, is given them to feed on at pleasure, they'll fat in eight or nine weeks, provided they are in fleshy order when first put in.

Beans, or pease, or oats, given with bran, in a crib, or trough, are not only a dearer food, but are more liable to be stole, as they are exposed

posed in distant fields, by night, as well as by day; whereas, the chaff and malt-dust, being a much sweeter, softer, and cheaper food, will be more greedily eaten by the sheep, and is safer from being stole.

The chaff of clover may be had at a trifling expence; for a good workman will cut for a penny, a double bushel; or if he is paid by the day for cutting it, he may cut twenty-five double bushels in twelve hours time. I am here also to observe to my reader, that the second crop of clover may be better for this purpose than the first, because the second crop generally comes up finer and smaller in stalk than the first crop, and, consequently, will cut the finer chaff; and if the clover is sweetened by being a little mow-burned, it will add to its goodness, by inviting the sheep to eat it sooner, and in the greater quantity: and as to the malt dust, it is like clover, to be had in most parts of *England*, at sixpence the single bushel, at dearest; and in some places it is cheaper.

In a common market, where the feed of such sheep is not known to a buyer, a larger price than ordinary is not to be expected for them; but where it is known that sheep are fatted in part with this sweet and healthy crib-meat, a butcher will be glad to give more for them, than if they were fed altogether on the raw turnip, or rape,

Thus

Thus I have here exposed (as well as many others in my foregoing accounts) a secret that may be made of inestimable value, both to the vale farmer, and to the chiltern farmer, for fattening sheep in the quickest, cheapest, and sweetest manner, or where sheep are to be kept all the year, as store sheep, for the fold, or otherwise. This winter crib-food may be made, not only to preserve sheep from diseases, but it will also help to keep them in flesh and heart at a little expence, and consequently, be the means of increasing their fleeces of wool against sheering time; for the better any sheep are kept, the more wool they will return, and of so fattening a nature is this malt-dust, that I have been informed an ox has been stall-fed, and fatted with only this and hay, near *Selsoe*, in *Bedfordshire*.

Sheep fatted with Pease or Beans.

Many farmers, in vales, that have not turnips nor rapes, to fat their sheep with in winter, have fatted them with a mixture of hog-pease, or horse-beans, in troughs or bins, with hay, and water besides, if they will drink it; but they do better that fat them with clear pease and hay: however, as vale farmers run mostly on beans, their sheep are generally fatted with clear beans, and hay; two bushels, or three, given in order, will fat a sheep with the help of hay and water; and when they

they are given in a bin, like that out of which pigeons feed, it prevents their fullying and daubing their meat, with their dirty feet.

Of all corn trough-meat, none is more agreeable to sheep and lambs than oats or pease; oats are dearly beloved by them, and are very wholesome and fattening, but are better given in a mixture with barley-meal, or bran, or pollard, than alone: some, I hear, have wrongly given sheep barley-meal, mixed with bran, as an only trough-meat for fattening sheep with; but this is a bad practice, because the meal will be apt to stick in the sheeps teeth, nor will they eat this mixture long before they are cloyed with it; but if whole oats are mixed with either, or both of them, it will become a good fattening trough-meat; or, in case oats cannot be had, pease will well supply their place. Some are of opinion, that sheep love oats, beyond all other corn. This mixture produces sweet flesh.

A crib should be made with one bottom board, fourteen inches wide, and ten foot long; the two side boards thirteen inches wide, and ten foot long; two ridge weather-boards must be each ten inches wide, and ten foot long, that covers the crib; the three upright, thick boards must each be fourteen inches wide, and three foot high, that supports the two ridge weather-boards, one at each end of the crib, and one in

the middle; which three boards are sloped at each side of the top part, to nail the two weather boards on. By this make of a crib, there are two partitions, one for holding corn, or bran, or chaff, or any other short meat; the other for holding hay or straw; which crib is made a moveable one, by fixing a cross, wooden, hollow handle, in the middle of the outside of each end.

Hay.

It is too often the case of chiltern farmers to bring their store-sheep under much poverty, and sometimes death, for want of a sufficient winter food for them. Those that trust to their turnip feed are now and then disappointed of it by dry weather, or by the fly, &c. and then the poor sheep must take their chance of getting a living on their barren fields, or commons, or in lanes; and if a snowy, long season follows, they will give them nothing but straw or hay; and as they keep young and old sheep, and lambs, in one flock, if the younger sort will not eat it, they must die, as many do commonly every year. Some lambs will starve before they will eat hay enough to keep them alive, and a two-toothed sheep will but make shift to eat straw sufficient for it; but when they have four teeth, they do better; and when they have six broad teeth, or are full-mouthed, they then eat straw the best of all.

A butcher

A butcher farmer by me, gave his ewes and lambs grains in a trough, in the month of *March*, when the ground was covered with snow, and it produced abundance of milk, which, with hay besides, kept them well, and learnt the lambs to eat hay with their dams as they fed together; which made this butcher say, he thought it the best way to learn lambs to eat hay, as it is a dry food, and agrees well with the wet grains.

It is to be observed, that about this time of year, when grass is eat up, or spoiled by the frost, many lambs and young sheep tip off and die, that do not eat straw or hay well; therefore some have been at the pains to learn their lambs to eat hay, by drawing some now and then through their grinders; and the same of bran, or other trough food, they will cram a parcel now and then in their mouths, for obliging them to mumble and chew it. This butcher tells me, that the lambs at two months old, eat hay with their ewes, when some, at a year old, will die before they will eat enough.

Feeding Sheep on Clover Hay.

This, if inned or housed a little green and dry, will heat and mow burn; then it comes out so sweet, as to intice sheep to eat it very greedily, and make but little orts of its stalks. The six-toothed sheep, and the full-mouthed sheep agree best

best with this food, because they have the sharpest and strongest teeth; and if they have grass, or turnips, or cole, or water to come at besides, they will thrive apace on it.

A *Hertfordshire* farmer, that lives on the edge of a common, feeds them all day on the common, and at night brings them into his yard, and gives them thatches in their straw in a rack, and what thatches are scattered on the ground, the hogs pick up; so that the sheep eat the straw and some of the thatches, and the hogs the rest; and thus he makes much dung, by the sheeps being confined all night in the yard, and keeps his cattle in a thriving condition besides.

Another farmer of my acquaintance, when the winter weather is open, feeds his store sheep with one sort of straw or other, out of racks that he sets in a fold on his meadow-ground, and thus folds it good part of a winter, without hurting his sheep; for folding on grass ground does not hurt them like plowed land. I know a farmer that gave his store sheep straw in a rack, the best part of *April*, 1738, because the season was dry and cold.

In vales in particular, they commonly make cribs with two boards, ten or twelve inches broad, and six, or eight, or more long, with a long cross stick, about two foot, or eighteen inches, raised higher than the trough or crib, to prevent

prevent the sheeps getting into it: others do not do this, but nail here and there short cross bits of sticks to prevent the sheep getting into the trough or crib. These cribs, if used in winter on dry ground, may be made to serve for holding straw or hay in a fold, and moved when the fold is, or, as is most commonly done, kept in farm-yards, for feeding store-sheep to make dung; and are rather better than racks, because the lesser sort of sheep and lambs cannot well reach to feed out of a rack, when they can out of a crib: others will feed their store sheep, in winter out of racks, but take care to drive a stake at each contrary end of it, to keep it from falling; for some have, on sheeps rubbing them, fell down and killed some. Such dry winter-food keeps sheep in heart, and prevents the breed of the white, or red-water, and the rot.

A great farmer, falling into an opinion, that the great poll sheep would turn mostly to his profit, bought in a large parcel of them; and having sowed much clover, to bait them in his inclosed fields, he baited them in it every day, after they had been kept on the common, from the morning that they were turned out of the fold; but finding that they carried off more dung to the common than they brought home, he soon grew weary of them, and kept a smaller sort of sheep, whose narrow mouths, and thinner lips, could bite closer than the larger sort; besides
which,

which, smaller mutton, well fatted, sells better to the butcher than the larger sort; some are of opinion that great mutton will never be in that vogue it has been, because gentry can afford to have fresh joints the oftener of smaller mutton.

The common practice of the best chiltern farmers, is to give their store sheep hay every night in a rack, in *April*, as they go on a common in the day time, because this dry meat is now more wanted than at any other time of the year, to prevent the new spring shoot of grass bringing them under the scour and red water, which will have these ill effects on the sheep sooner, if they have been feeding (as most of the chiltern sheep do) on the watery turnip, part of the foregoing winter; and thus the poor beasts are brought under a double cause of being infected with one or both of these fatal maladies, which in some years, more than others, sweeps away many of the farmers flock, even while they are well maintained in turnips or grass; for these distempers are incident to well-fed sheep, as well as to poor-fed sheep: therefore, unless there be a counter, dry feed given sheep, at this spring time of the year, if the red water is not arrived to its full destructive quantity, it will be increasing, perhaps till it kills them, though it may not be till the *Michaelmas* following.

Every

Every night confine them in an inclosed place, where are ready provided for them wooden troughs, that have each of them a stick fastened long-ways over hay, to prevent the lambs dunging and staling on it; or if they have not troughs, they have narrow, low cribs to hold hay in, that answer the same end. By these means their lambs seldom rot in winter time, but go on well, and grow fat enough to pay their owner, better sometimes than any thing else about his farm.

A farmer bought in forty *Western* lambs, at about five pounds a score, with a design to winter them; and accordingly fed them in his ploughed grounds and meadows, till a deep snow fell, which totally deprived them of any grass. This obliged the owner to carry them some hay, that he dispersed under the hedges, which they eat and did very well throughout the winter. But another, that bought in the same number, had not such success; for, when snows fell, and lay shallow, this man carried them hay in like manner, as the other did; but they would not eat it, because they had room enough by their pawing, to come at a little grass, which made them refuse the hay; and thus they went on, till most of them died by hunger. This occasioned him, afterwards, to alter his management; and, in succeeding years, upon the fall of snow, he

would bring his store lambs into his yard, and learn them to eat hay.

S E C T. IV.

OF THE MANAGEMENT OF SHEEP.

SHEEP of all beasts, next to horses for ploughing and carting, are the most necessary of all others to the farmer, for the profit of their folding, for their wool, and for their flesh; yet, to make this beast answer to the greatest profit, is what all farmers aim at. On this account it is that at this time I employ my pen, and, if I can contribute any thing thereto, I shall think my labour well bestowed.

I know a yeoman, whose land or farm is about sixty pounds a year, that, as I remember, kept eighty ewes and wethers. Seventy acres of this farm were arable, and the rest meadow. This farmer, one year, happening to overstock himself (notwithstanding he had a small common before his door) he suffered a great loss by the death of almost half his flock, that died of the hunger-rot; for he grudged them hay, and his ewes did not care to eat straw, and his grafs was eat up before the winter was half gone, by his three cows, and four horses, and sometimes with sheep, so that there ensued a great mortality by red water, gripes, and want of meat.

Another farmer that lived about a mile distant from him, did rather worse, for this man kept near a hundred ewes and wethers, and had only twenty acres of inclosed ploughed ground; but, having a large common before his house, he presumed upon the feed of that, which in a mild winter happened to answer his expectation; but the hard winter of 1739 following, I believe he lost near half his flock by want of food.

Another farmer about a mile distant from the last, that rents about an hundred a year of ploughed land, keeps two hundred and sixty sheep, with the assistance of a small common and his inclosed fields. This man acts the good husband, as the other two did the bad one; for he always takes care to sow as much clover and trefoil as is necessary to bait his folding sheep all the summer long. When his shepherd unfolds, he drives the sheep to the common, and there lets them remain commonly till two of the clock, and then brings them into the field for baiting them; thus he improves his ground by sowing artificial grasses, gives his sheep a bellyfull every day, and gets his ploughed land folded in the greatest extent; and what tends likewise very much to his profit is, the sheep, by such plentiful feeding every day, always are maintained in a fat condition, which brings me to what I most intend by this chapter, viz.

As soon as the corn is got out of the field, if your flock consists of a hundred sheep, draw out twenty or thirty wethers, and put them into one stubble-field, where let them feed till they have eaten the grafs of it about half down; then open another stubble field, and turn them in there, and so on keep feeding and shifting them through all your fields; by which time your first field will have got a fresh bite of grafs; here continue till your turnips be ready to feed, which, if they were sown forward, will be fit to turn into at *All-ballontide*; and, if the soil happens to be a dry one, and the weather dry also, your sheep will soon be fat for the butcher. The before mentioned farmer, last spring, 1742, sold one hundred fat wethers, for one hundred pounds, that were store-sheep but the summer before, and part of the two hundred and sixty.

Now, observe, that the sheep, that this farmer so fats, are generally six-toothed wethers, and sometimes those of four broad teeth; these are the right profitable sort for fattening, and not the two toothed sheep, as some would fain make out; for, how can a sheep of two years old fat so soon as those a year or two older, while they are in their height of growing. If these were to be fattened, they must in course have the longer time, because their food would be spent in growth, as much as in fattening, very likely. But,
when

when sheep are three or four years old, they fat sooner, because they are then almost at their full maturity of growth; therefore a four-toothed wether sheep at three years old, and a six-toothed wether at four, are certainly the only two sorts of profitable sheep to fat, which they will soon arrive to, if they have gone through the three several stages of fattening, I have before mentioned.

This is the method I pretend to follow myself, and it is by this improvement, that we get our ploughed grounds dressed in the cheapest manner possible, in a great measure clear of that empty notion, which I know some persons have entertained and insisted on:—That the grass, employed to feed these sheep, is worth as much as the folding.—This I deny, because the ground, being sown with clover, is dressed by the clover-crop and the sheep while feeding on it; for clover is called the mother of corn, as I every year prove; for by letting of a full crop of it grow two years together, that is either fed or mowed, I seldom miss of a good crop of wheat, by sowing the seed on only one ploughing of the clover-lay up; and this without any dunging, as I have experienced it many years, particularly in the last of 1742, when I had above twenty-five shocks of good wheat on an acre of it.

Hence it may be observed, that, where a farmer has the conveniencies of a near common for his sheep, he ought to keep most, or better, all wether sheep (if he does not suckle house-lambs) because he can draw out, fat, and sell a parcel off every year with greater assurance, than raise a profit by breeding and fattening grafs-lambs.

But there is another way that our *Chiltern* farmers manage, where they have a number of sheep, accordingly; or, when turnip crops fail, and that is thus: the *Middlesex* hay or grafs farmers about *Michaelmas* time usually pay us visits, to know if we have wether sheep to sell, because they put a great part of their aftermeath to the use of fatting them for *Smithfield* market; and, if we can get them pretty forward in our stubbles, they will then perhaps fetch twelve or fourteen shilling apiece; but when our turnip crops mis, we then are forced to sell the greater number to these grafs farmers, so that we have always a market ready for our store wether sheep about *Michaelmas* time.

It is on this account that we *Chiltern* farmers are very careful as soon as harvest is quite over (which is seldom till in *September*) to draw out those wether-sheep from our folding-flock, that are forwardest, that is to say, those that are most fleshy, and put them into our stubbles, and then either to sell them, as I said, to *Middlesex* farmers,

or

or to put them into turnips; for all forward fatish sheep will stay out in the weather and feed, when the poor ones will shrink under a hedge; and sometimes such forward sheep will fat in the very stubbles without any farther help, or in the after pastures by *Allballontide*, and then the turnips will serve others: but, if you have any old ewes that want their teeth, they will do best in grass, because they cannot bite a turnip.

SECT. V.

OF FOLDING.

SUMMER folding of sheep, as I said, agrees with most sorts of earth in *Great Britain*, whether they be of the vale or *chiltern* sort, and therefore it is of the greatest consequence to farmers to make use of it in the most advantageous manner. In vales, in summer time, their sheep seldom have any other meat but what they can get in their fallow fields, in lanes, and on commons; which though in long, hot, dry seasons, their grass is very short, yet as their ground is commonly of the richest soil in the kingdom, their grass has a spirit in it, of the most feeding, fattening nature, insomuch that with only such a bite of grass, they will carry on their folding, with large flocks, throughout a summer, and do it so well, at once folding over their ground, that they seldom fail of having the

largest crops of grain by it. But in *Chiltern* land, we take a different method, in several respects, from their necessitous vale way of doing it: as soon as the sheep are let out of their fold, we drive them into an inclosed fallow field, there to feed till about two or three o'clock in the afternoon, then bring them into a field of clover, or of trefoil, or of raygrafs, where they stay eating till night, when we put them into the fold, which we every day shift on a fresh piece of ground; or if there be not meat enough for them in the fallow fields, we drive them to a common, or about lanes to feed, till baiting time, on clover, trefoil, or raygrafs; or in case we have no artificial grafs for them, we generally have green thatches, sown on purpose to bait them in; upon any of which green meats, we commonly feed them till they get a belly-full, if a belly-full is to be got; for, without a belly-full, their dung and stale will prove a poor dressing, and, very probably, deceive the farmer of his expected good crop of grain.

But this is not all, for if a shepherd is a careful and diligent one, he will fold his sheep in such a manner, as to do the ground much service, and yet not hurt his sheep. To answer this, he must not fold them in a wet time, on any ground, especially in vale, or wet *Chiltern* ground, because this sort being naturally wet, it is the sooner

sooner made so, and then the sheep will make holes in it by the tread of their feet, that will let in the rainy water, and sour it, and greatly damage it: so in drier, *Chiltern* lands, a shepherd should be very cautious of folding sheep in wet weather, for though the damage of folding them here, is not quite of that pernicious consequence, as it is in vales, yet it may hurt both ground and sheep.

It sometimes happens, that, on an evening, the weather may appear fine and clear, and yet heavy rains may fall in the night, to the prejudice of both ground and sheep: in this case, a good shepherd ought to get up in the night-time, and let his sheep out of the fold, for avoiding that mischief which might attend their being confined in such weather. A shepherd, that is now working for me, is so careful a man, that he has many times in a year, rose out of his bed, to let his flock out of the fold, for preventing this sort of damage; a damage, that sometimes may do a flock more harm, in one night's time, than they may recover in many days, if at all; for it subjects sheep to catch such a cold, that may bring them under the gripes or colick, fever, and loss of appetite, &c. &c. and also be the means of breeding the red-water, if not the pelt rot. And if the true reason of some distempers in sheep, were known, I do not suppose, but that such ill management of a flock's being closely

closely confined, in a fold or pen, a whole night, while great rains fall on them, would prove the very efficient cause of them.

As vale land is generally of a richer sort than poor or *Chiltern* land, it does not require to be folded so thick as that: therefore, where eight hurdles in each square, thirty-two in all, are made use of in a *Chiltern* country, in vales they add four or more, for the same number of sheep, and set their fold in a long square; because their ridge, half-acre, and whole lands, lie in such form.

In the vale of *Aylesbury*, they never begin folding till *April*, on their fallow common field land, and continue it only till about *Allhallontide*, without feeding their sheep with any dry meat in the fold; but in dry, *Chiltern*, inclosed land, many farmers fold all the winter as well as summer: and so universal a dressing is the sheep fold, that no sort of dung, nor manure, exceeds it, considering its serviceable uses in the several shapes we farmers employ it in. But above all, it is of the greatest service to the vale farmer; for by it, and the assistance of the stable, the farm-yard, the cow-house, the hog-sty, and the pigeon-house dung, thousands of them carry on their vale farming, without being at a half-penny charge in buying any auxiliary dressings and manures,

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It is true, that the vale farmer cannot carry on a winter-folding in the field, as the *Chiltern* farmer can; yet, even in winter, his sheep can make rich dung of his straw, in the farm-yard, or in some other place; and this in large quantities, for dressing his barley-land. Again, the vale farmer enjoys a compensation for being deprived of a winter fold, by the natural richness of his ground; which exceeds in goodness, as I said, most, or all, our *Chiltern* land; and therefore they commonly have the biggest crops of grain at the least expence. We *Chiltern* farmers only outdo them by having those crops in our inclosed fields, which they cannot have in their open ones, as turnips and artificial grasses, &c.

I know a farmer in our *Chiltern* country, that rents a farm about seventy or eighty pounds a year, consisting chiefly of gravelly, chalky, and dry loamy soils, that lies some of it in open fields, and some of it in inclosures, whereon with the help of a common, he keeps about three hundred weather sheep; and his way of making them answer to the greatest profit is, by buying in lambs, either at *Michaelmas*, or at *Allballontide*, or at *Candlemas*. Those that he buys in at *Michaelmas* or *Allballontide*, he takes care that they be forward, grown stout lambs, for their being the better able to eat straw, and withstand the severity of hard winter weather, well knowing that a poor
lamb

lamb will pine, and be stunted, before they will eat straw, and withstand the severity of hard winter weather; and if a lamb falls away, and is stunted the first year, he seldom makes a good sheep afterwards. It is for this reason, that this notable farmer is seldom or never without a crop of turnips provided for this purpose, wherewith to feed his new-bought-in lambs all the winter and spring season; and in case deep snows, or other hard weather happens, he then brings his lambs into his yard, and feeds them with straw every night, and, in the day-time, he lets them scratch among his turnips; and if they are strong and hearty, they will work hard and get a bite, when a wether lamb will go without either of them, and thus starve and die: but when strong, well grown lambs feed on turnips in the day-time, and on straw at night, they will thrive and grow even in winter and in the spring, and be the sooner ready to become folding sheep the very next summer; because such their dry meat agrees well with the watery turnip, and the turnip with straw; for this farmer hardly is ever known to give these forward bought-in lambs any hay, which obliges them to eat straw.

And now I am mentioning straw, I have to observe to my reader, that in my opinion, many farmers are wrong in giving their lambs straw, as it first comes out of the barn after thrashing; because,

because, in this condition, it is rather too hard for their tender mouths, and, consequently, in some degree, discourages them from eating enough of it to do them good; for, at best a lamb, the first year, does not care to feed on straw: therefore, whether it be wheat, barley, oat, or pease-straw, thetch-straw, or bean-straw, the three first sorts in particular ought to be thrashed over a second time, to soften it, and fit it the better for inviting the lambs to eat it with a willing appetite. I am sensible, that it is the practice of some good husbandmen, after their wheat-straw is thrashed, to make a cock or mow of it in their barn, or abroad, in order to magazine and keep it in store till a leisure time happens to thrash it over again, for making it the more tender, that their cows (the younger sort especially) may eat it agreeably easy; and yet not regard doing the same for their lambs and young sheep. Wheat-straw is the hardest of straw, and if it is not doubly thrashed, it is somewhat unfit for lambs and sheep eating it; for, at best, it is the straw they least love, and what they do eat of it, is chiefly its knots.

And as to those lambs he buys in at *Candlemas*, it is a time when grass and turnips are, for the most part, eaten off by cattle, or rotted by the frost: in this case, such late bought in lambs should have the best of hay given them, if not
pease

pease or bran besides, in a trough, to keep them in good order against summer folding. I have also further to observe, that, as all lambs generally shift, and get two broad teeth between *Christmas* and *Midsummer*, it must go the harder with many of them, to feed on the bite of very short grass, or to feed on straw in the spring time; therefore hay is the more necessary to accompany turnips or grass at this season, if a person would have his lambs kept in good flesh and heart, for a summer-folding: for a hearty sheep will feed heartily, and get a belly-full, where a little poor stunted one, must go without it, because a stout sheep will certainly beat and push away its inferior, eat the better meal, and stale and dung the more, to the greater enriching of the ground they are folded on. Thus, by his buying in lambs before and after winter, and folding them as sheep, and fattening them afterwards, this farmer, as well as others that do the same, get sometimes more by their sheep, than by their corn; therefore, that author, that calculated, and said, without exception, that sowing of artificial grass, and eating by sheep, the grass is as much worth as their dung, is wrong; for as these grasses are commonly sown only on that ground, that would otherwise lie fallow, it does not deserve to be called a loss, but a profit.

Folding Sheep in Winter.

It is true, that spring and autumn folding of sheep in vale and chiltern countries, generally ends about *Allballontide*, because the weather, by this time, oftentimes comes in so hard, as to make it not worth while to carry it on longer, unless we can give the sheep such a plentiful feed as to enable them to withstand the severity of it. This, indeed, few pretend to do in vale, wet grounds, because as the dressing ground with sheep's dung, is but a cold, thin sort of dressing, it will not agree with their land in the winter season; for if sheep were confined here in a fold, at this time of year, they would stolch the ground, daub their feet and bodies, catch cold, and, in short, do the land and them more harm than good. But the case is otherwise in most parts of *Hertfordshire*, and other chiltern countries, where our soil is of a sandy, gravelly, chalky, and of a dry, loamy nature; for these conveniencies give us chiltern farmers a valuable opportunity to fold our fields almost throughout a mild, dryish winter.

But to do this, straw alone will not answer; there must be a plentiful provision made of proper food, by getting a sufficient quantity of it ready for feeding sheep with it all the winter and spring; accordingly we, in summer, sow as many
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of our inclosed fields, as we can spare, with turnips-feed for this purpose; and having crops of this most serviceable root, our shepherds shift their folds every night on a fresh parcel of them, and, in the morning, bring the sheep into the straw yard, for to feed and bait them here for three or four hours; at the end of which, he drives them into the fields, or on a common, to graze and pick up what meat they can find against night, when they are folded again: thus we proceed folding our store-sheep, night after night, all the winter, except in snowy and rainy weather. This they cannot do but in few vale grounds, because they dare not sow turnips on their ridge, wet, black, loamy, vale lands; it is true, they may get crops of turnips on them, (if their earth is not too rich, for if it is, the turnip will run into leaf, and not apple;) but what will be the consequence of it? It will, instead of improving their land, spoil it, and this for several years together afterwards; because although they may draw their turnips, and feed their sheep dry with them on meadow ground, yet the holes that the turnips leave behind them, will so lodge the waters, as to sour their land, breed weeds, and much lessen several of their crops of grain, that presently succeed such their turnip crops; whereas, by our occupying dry, chiltern land,

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we have an opportunity to improve it, by turnips, in a high degree, and this by more than one sort of management of turnip crops.

I said before, that we shift our fold every night, to give our store-sheep fresh bites of turnips; but then it may be asked what we do with the offal turnips, or those orts or pieces left uneat by them? To this I answer, that, after we have brought our sheep into the straw yard, and turned them to graze afterwards into the fields, we bring them, in the afternoon, into the turnip-field, and there let them feed on these offal pieces of turnips, that are picked up on purpose for them, till night, that we fold them on more fresh turnips; and so on, till a whole field is eaten up. This is one way of double dressing the ground, by the feed of store-sheep on turnips: but the following method is another way of doing it.

Where sheep are to be fattened on turnips for sale, many of our most judicious, diligent farmers, feed their store sheep with them, as well as their fattening sheep in the same field, and thereby double-dress their land for grain; for, as the fattening sheep advance, in feeding openly on a fresh bite of turnips, the store-sheep follow, by being every night confined in a fold, on a parcel of their orts, that are duly picked up for them. Again, as turnips seldom last till trefoil, or clover-grass, is grown high enough to become a feed for their

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sheep, in the spring-time of the year, many of our chiltern farmers make a prudential, timely provision, for feeding their sheep after their turnip-crops are eaten off; and this we do by sowing rye in *August*, that it may get an early head for feeding sheep when turnips are gone; and this it may do, if a right management attend the crops; to this end, I will suppose the turnip-crops last throughout *March*, and that the rye will be fit to turn sheep into in *April*; and when the sheep have done feeding here, the trefoil, or clover, may be ready for baiting them, or the winter thatches that were sown about *Michaelmas*, may come in to be fed by store-sheep, the latter end of *April*, or the beginning of *May*, and so on.

Sheep may be fed and folded, by such feedings, all a mild, dryish winter and spring, till summer comes, for giving our farmers an opportunity to feed our sheep then, on our fallow grounds or on commons, for carrying on the folding, and dressing our ploughed lands. Thus, all the year, to the saving of much expence in buying hand dressings, and bringing them home from considerable distances, we carry on the folding of our sheep: but if turnips, rye, thatches, trefoil, ray-grass, or clover, happen to be a scanty crop in the spring-time, we then give our store-sheep some hay every night in the fold, to compensate the loss, and make up this deficiency, or
want

want of a belly-full of turnips, rye, thatches, ray-grass, or clover, or cole, else it may occasion the death of many of them; for as, in the spring-time, the ground is commonly cold and wettish, if these creatures are not kept up in good heart, it must, in course, become fatal to them.

Hurdles.

This article is of great service to farmers, for having their folding hurdles in that right order, as best serves their interest to fold their sheep in. There are close-made hurdles, and open made hurdles. In our chiltern, inclosed fields of *Hertfordshire*, where the hedges stand thick, we make use of the five-floated open hurdle, as thinking there is no occasion here for the close hurdles, where such fences break off much of the violence of boisterous winds; besides, as our lands, in chiltern countries, are of a dry nature, sheep, even in winter, are not subject to stolch, and daub their feet and bodies, as in low, wettish, vale grounds: but, in such vale lands, the case is otherwise, especially where they lie in open common fields, as most of them do. The same excess of winds blow also in some dry, large, open fields, and the more, where the land lies on hills: in both these last situations, the close hazel-rodded hurdles are now much in use; and, indeed, are an excellent sort to break off the cold

bleak winds, and other weather, from the sheep, as they lie confined all night in the fold; for, indeed, it is enough for the poor creatures to endure the chill of the earth, and not to suffer besides, the violence of winds, rain, snow, and hail. The next sort of hurdle is the five-floated open hurdle, drawn with furze-stalks, which some of the most dexterous workmen will so cleverly perform, by weaving them in and out through the floats, that they will make a close hurdle of this open one. The third sort of hurdle is likewise an open one, drawn with wheat straw; which, after the ears are taken off from it, the straw becomes somewhat like reed; and where it is well woven about the floats, it will prove a very close, and yet not a very heavy hurdle, that will, like that drawn with furze, last two or three years, for folding sheep with.

Now the use of these sort of hurdles is this: In vales, you must know, they do not fold their rich, black marly land so thick, as we do our poorer, drier, chiltern land; therefore, to about an hundred sheep, thirty-two open hurdles to make a fold, is allowed here, whereof ten are generally drawn with furze or straw; whereas, in our chiltern country, we make use of about twenty-eight, all open hurdles, to that number of sheep; and where these close-drawn hurdles are thus made, they are every night set to the windward

ward of the fold, in order to break off the wind and weather in some degree, and lessen their violence in defence of the folded sheep: so that about one third part of the fold is composed of close hurdles, and all the rest with open hurdles: and thus, the meat eat in the day time, by the sheep, does them the more good at night; besides their bodies being kept somewhat drier and warmer than they would be if some of the hurdles were not drawn; a practice carried on in several countries, as well as in the vale of *Aylesbury*.

However, in my opinion, this piece of husbandry is not yet extended to its proper length; if it was, they would draw every open hurdle with furze, or with reedy wheat-straw; then let the wind shift and come any way, every hurdle would stand right for breaking off its force, as the rodded hurdles do. Nor have they any objection against this, but that it is more chargeable and troublesome to move such drawn hurdles every night, than it is the open sort. Again, if this my hint is not accepted, I here propose another, which is, that if only three or four drawn hurdles, more or less, are set every night in the middle part of the fold, they will be somewhat serviceable to break off, and lessen the fierceness of the weather from the sheep. Thus, the number of drawn hurdles are a little in-

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creased,

creased, and yet will answer, in a great degree, the end of securing the sheep from the violence of storms, and causing them to eat what meat is allowed them in the fold, with the better appetite, for doing them the most good.

Folding Sheep, in the West Country.

Here, as I hinted before, they always make use of rodded hurdles, summer and winter, because much of their land lies high and dry, in open fields, or in down; and as each of their chieftest farmers folds his numerous flock, even enough to dress an acre of ground at once, some of them have several racks of hay, within their large, rodded fold, that proves a second fence, to break off the winds and weather from their sheep; for, as the racks stand, the sheep have the liberty to feed on the warm sides of them, and, at the same time, add a benefit to their folding, by the offal hay they pull under their feet in feeding; for on this they piss and dung, which being afterwards wasted by the weather, and pulled into the earth by the worms, it enriches their ploughed lands to a great degree.

Indeed, I cannot see, but that the example of my own practice may be likewise serviceable to others, who occupy dry, chiltern ground; which is the scattering a little straw upon it every night, in the winter-time, for the sheep to water and dung

ding on it, and to keep their bodies from the chill of cold wet lands; for, by great rains in the winter, and spring-time especially, any of our inclosed fields are in this condition: and thus sheep and lambs may be made to fold arable land in winter and spring weather, and yet kept from the chill of rains and bleak winds.

But as to their folding of sheep in vales, few, as I said, can do it, without spoiling their land, and killing their sheep; for here they have enough to do to keep them alive and in health, throughout a hard winter, in their farm yards; therefore they make use of sheep-cribs, that are made with only two side boards, ten feet long, and three short ones across; one nailed at each end, and one in the middle of it, that are a foot in breadth, for holding hay, that the sheep may eat it without daubing and dirtying it with their feet. But if vale lands are folded in winter, it must be those of the dry sort; for, in some vales, there are sandy, gravelly, and dry, loamy soils, as well as black, wet, loamy sorts; and here a drawn fold may be made use of all, or most part of a winter, to a farmer's great advantage, as it is done about *Leighton-Buzzard*, *Brickbill*, *Wooburn*, and in some other parts of this vale of *Aylesbury*, where they sow turnips, and feed their sheep and fold on them, by these drawn, or rodded hurdles; which last sort are made by

some of the more ingenious shepherds, with hazel-
rods of sixteen years growth; for, at this age,
they will bend, and are full strong enough for
this purpose, to be twisted about four stakes or
legs, whose bottom parts are to be drove into
the earth at each removal, and are so close woven,
that a hare cannot get through them, nor a sheep
leap over them.

The advantage of folding Sheep on new-sown Corn.

As no improvement of ground comes up to
the common way of husbandry, it highly con-
cerns all farmers, that practise farming out of
the drill way, to enjoy as much of dressing their
land with sheep as possible; to which purpose,
such dressing should be carried on, and obtained
before and after the wheat and barley, &c. is
sown. As to the making use of it before the
sowing of seed, I have already wrote so much on
it, that I have the less to say here; and now come
to shew how it ought to be carried on after the
grain is sown.

As soon, therefore, as the seed is sown, and
the field is in order to receive the fold, it ought
to be clapt on the same ground, and when moved
every night, the sheep should be folded in the
same, and so on till the wheat, barley, &c. is an
inch high; and although the sheep may nab and
eat it, they will do it little or no harm, as they tread
and

and fasten the earth on and about the roots of the grain; on the contrary, they will do it much service: for, first, if it be a chalky, sandy, gravelly, or other loose earth, the sheep by being confined thick in a fold, on a small quantity of land, will so tread the surface, as to make the feed and the ground lie close to each other, by which the seed will have a much greater advantage of growth, than if it lay looser in the earth. Secondly, as the feed lies in this close pasture, the worm cannot have that free access to hurt it, as it might have when the earth lies loose about it. Thirdly, by the dung and stale of the sheep, and by the oily, offensive nature of their wool, which also, in some degree, affects the surface earth, after sheep have lain on it, and the rains have washed them into the ground, not only the worm is obliged to lie deep in it, for avoiding their unnatural scents and tastes; but the wheat is thereby greatly fertilized, and their growth carried on in the most flourishing condition, by their virtue, even till harvest; provided always, and it ought to be well observed, that such folding on new-sown seed, be carried on in dry, fair weather, for, if it was to be done in rainy, wet weather, the sheep would do more harm than good, because they would stolch the ground with their trampling on it, make holes in it with their feet, and thereby let in the rains that would
kill

kill the feed, foul the ground, and breed the weed, to the destruction, perhaps, of most, if not of the whole crop.

It is true, indeed, that fold-dressing of land, for improving crops of grain, causes the crop to be a little later ripe, than if the ground was dressed with horse, or hog, or fowl-dung, &c. Yet this deficiency is thoroughly compensated, by having the land dressed with the dung and stale of sheep, free of those noxious weeds, which generally accompany dungs from stables, hog-styes, and cow-houses, &c. Nor is there hardly any land, but what the new-sown seed on it, may be improved by the fold; provided, as I said, the folding is begun immediately after the seed is sown, and fair weather happens while the same is doing.

The folding of sheep to the greatest advantage, very much depends on the judgment and discretion of the farmer. For example: The chiltern farmer finds, by true experience, that when sheep are folded on ground, newly hacked by the plough, he receives a great advantage by it; because by folding on such ground, the dung and stale of the folding sheep is immediately covered by the earth, whereby they are not only better, and presently mixed with the earth, but they are likewise much better secured against the attractive power of the sun, and the driness of the winds,
than

than when their dung and stale are left only on the bare surface, as they are always done, when they are folded on lands, ploughed in the broad-land mode.

Now, in course, there will a question arise here, What is hacking of ground? To which I answer, that it is a particular form of ploughing ground, and is what cannot be practised by those farmers who occupy vale, ridge-lands, and never plough them cross-ways. Hacking may be performed on chalky, gravelly, loamy, or clay lands, provided they be sometimes ploughed across; and is what is done by many farmers in *Hertfordshire*, chiefly at the first or second stirree of land: supposing then that the ground is harrowed smooth, we plough a furrow, and in coming back with the plough, we turn the same furrow back again; so that tho' the earth lies in the same place, as before it was disturbed, yet the land lies, by this operation, in an uneven posture, and the sheep by treading it in the fold all night, treads it almost even, and thereby covers most of their dung and stale they have discharged while in the fold; and indeed it is an excellent way of ploughing ground, to make it fine in a little time.

I have likewise to say, that though I call sheep-dressing an excellent sort (as it certainly is in the general) yet there is room for an exception,
for,

for, as I have before hinted; it is a cold dressing; and so cold, that in the hard, frosty year of 1740, that wheat-land which was dressed by the fold suffered most; and that wheat-land which was dressed by dung, fared best, because it kept the roots of the wheat warm, prevented the damage of the frost, and caused the crop to flourish, when many crops dressed by the fold, perished; or, at best, they were but in a poor thin condition, at harvest: for this reason, we say, that sheep-dressing lasts but one year, when dung lasts two, as the vale farmer finds true, by his ridge land; well knowing that his bean-crop has little or no benefit from the preceding year's fold-dressing for wheat or barley, because the virtue of it is spent in that one crop.

Notwithstanding, I believe, I may safely say, that *Hertfordshire* is a county that practises folding of sheep, more than any one other county whatsoever; yet, in a part of the same, not very far from *Rickmansworth*, there are several farmers, who have always forborn to dress their gravelly, loamy soils by the fold, out of an opinion that it would be to little or no purpose, if they did; and this notion they retained, till about seven years since, that a farmer took a farm among them, that had a better judgment than they had; for they saw that he had more grain, in one year, by fold-dressing, than his predecessors had in four,

four, by not folding; which palpable proof so influenced them, that now several of them carry on the folding of sheep to their great advantage: yet there may mistakes be made, even in folding of sheep, as may appear by what follows, viz.

I confine my pen at present, to only the two-bout stitch; a form that most farmers in *Hertfordshire* sow their wheat in, because the seed is covered by four furrows of earth, and thereby the better defended against the extremity of frost, rains, drought, and damage of field fowls; here a farmer ought not to fold his sheep, till the wheat has appeared above ground, because, in this posture, the wheat-seed lies deep in the earth, and if sheep are directly folded on it, as soon as sown, they will so tread and fasten the ground, as to hinder the wheat coming up, and then the crop may be spoiled; wherefore the sheep should not be folded on it, till the wheat appears above ground.

This is contrary to what may be done on broad lands, for when wheat is only harrowed in on broad lands, it is perfectly necessary to clap the fold on the same, to tread in the seed, and fasten the earth about it; because wheat seed sown in this form, lies very shallow: here then may appear the difference of farmers judgments; some will fold on their wheat-stitches, directly after they are sown, others will forbear till the
wheat

wheat is above ground; but which is in the right, my reader may easily judge.

John Puttenham, of *Renxell*, in the parish of *Ivinghoe*, in the county of *Bucks*, living near *Ivinghoe* common, keeps a considerable number of sheep by the help of the same; and to do it, he lets his sheep go every day, when there is not a deep snow, on this common, throughout a winter, to pick up what grass they can find among the furze and fern that grow on this common; and nab and bite the end of the furze, &c. and every night he fetches them home, to feed on hay in a fold, which he shifts every second night, on his meadow ground; and so he continues his folding on all the winter, to the enriching of it to a very great degree, while his sheep lie dry, and get their belly-full of good hay; and also observes, to give a little parcel of fresh hay to his sheep in the rack, just before they go out of the fold to the common, for, in the morning, after they have staled and dunged, they will be very thin.

Thus, by feeding them on the common, in the day-time, and by a rack of hay in the fold at night, he thinks, with a great deal of reason, his sheep bring more meat and dung into his fold than they carry out. And what is further beneficial in this his management, he reckons he gets another profit, by thus feeding two toothed

wether sheep; for, as he buys this sort in at *Michaelmas*, at about seven shillings a-piece, after keeping them a winter, he thinks to sell them, the following spring, or summer, for ten shillings a-piece, when they have four broad teeth.—
N. B. The reason why he folds two nights together on his meadow, is, because folding on meadow will not answer, unless it is done two nights together.

The folding of ewe sheep, is certainly very profitable to any ground they are folded upon, if they have food in plenty allowed them; then indeed it is computed by some, that twenty ewe sheep, will do more good to land in a fold, than twenty wether sheep can; because they will eat more, stale more, and dung more, than wether sheep can: besides which, the urine of the ewe sheep is more rank, and more in quantity than that of a wether: therefore it is thought, that the water of sheep does ten times more service to land than their dung.

Some farmers, about *Stutely*, in *Bucks*, keep all ewe sheep to breed lambs and fold; for here is some sandy, gravelly, hilly earth, as well as low, wet loams. When the ewes have lambed, and the lambs have got a little strong, they fold both ewes and lambs, till about a fortnight after *Michaelmas*; and then they will sell their oldest
ewes

ewes off with their lambs, and keep the youngest ewes, and their lambs on, for storers.

Farmer *Ives* rents a farm, of about a hundred a year, in the parish of *Edlesborough*, in the county of *Bucks*, consisting of chalky, gravelly, and loamy soils, which he chiefly dressed by the sheep-fold, both in summer and winter. In winter, if he has no turnips, he drives his sheep on the common every day, and, before night, brings them into his yard, and there feeds them with one sort of straw or other, out of standing racks; and folds them every night throughout a winter, unless it rains hard at folding time; but when he has turnips he alters this method of managing his sheep, that is to say, when he has a crop of turnips take on his dry, husky, hurlucky land lying in open fields, he folds his sheep on the same all the winter: for, you must know, that this farmer, though he has every year, turnips on his good inclosed grounds, yet he seldom feeds his store-sheep on these, because he makes use of them for his fatting sale-sheep, and therefore sows such his poor, open-field land, with turnip-feed, only for his store-sheep; and if the feed takes, the ground is so poor, that he seldom has more than leaves, and some little dwindling roots; however, as he gets these, without the charge of hoeing, they come cheap, and serve him to fold his sheep on them all the winter, with

with the help of what grafs they can pick up about the commons, and some straw given them now and then.

Part of the land that farmer *Ives* rents, being, as I said, a poor, hurlucky, white sort, lying in the open fields of *Edlesborough*, he might improve it much better by sowing it with weld-feed, rape-feed, and turnip-feed, sown all together, than by sowing turnip-feed alone, because there is a much greater advantage belonging to this management than the other; for if these three sorts of seed are sown in a mixture all together, in the broad-cast way of sowing them, they will agree very well, as they are much of the same size and bigness one as the other.

To sow one acre of ground with them, you may mix four quarts of weld-feed, with two quarts of rape-feed, and one quart of turnip-feed, to be sown on a fine, tilth earth, made so, by several previous ploughings and harrowings; and observe that such sowing should be twice in a place, and harrowing it only once in a place. This being done on a well-hearted earth, in the month of *August*, there needs no expence of hand-hoeing them; for the crop of the rapes and turnips is to consist only in leaves, that are to be fed by sheep or lambs, or both, in the winter following; by which means, their folding on the same land may be made greatly to enrich it, and

so as to cause the weld-feed, that lies inactive all the winter, to grow and flourish into a very great and profitable crop in the following summer, after the rapes and turnip leaves are eaten off, and the folding of sheep has been carried on all the winter on the same, by the feed of them. Thus, while sheep are dunging and staling on the weld-feed, by their feeding on turnip and rape leaves, there is an improvement made of sowing all these three sorts of feeds.

Three farmers that have all one and the same landlord, and each of them occupy one and the same sort of ground, as chalks, gravels, and loams; and whose rents are about seventy pounds a year each. One of them keeps three hundred sheep, by the help of his inclosed fields, and that of a common, adjoining to his farm. The second, having not a sufficient common to graze his flock of two hundred and fifty on, pays so much a year for an inclosed, poor piece of grass ground, containing about one hundred acres, which answers his purpose; so that both these farmers get money apace, by their sheep, and other branches of husbandry. But the third farmer, having very little common ground, he is obliged to supply the want of it, by sowing several of his fields with artificial grass-seeds, and turnip-feed, &c. which causes him to lose money every year, by keeping a flock of one hundred and

and sixty sheep, instead of getting any: as may appear by the following particulars.—The quantity of land he rents, is about one hundred and sixty acres, for which he pays sixty-five pounds a year, and has generally thirty acres of it sown with artificial grasses, as trefoil and raygrass, which he sows on his white loams, and his clover on gravelly loams: he likewise commonly sows twenty acres of his fallow ground with turnip-seed, and the turnips that he eats off with his sheep before *Christmas*, he sows the same land with wheat; and those he eats off afterwards, he sows that land with barley.

l. s. d.

By keeping 160 sheep, he folds and			
dresses 20 acres of land, -	20	0	0
Wool of them, reckoning 2 pounds			
one with another, 12 todd,	7	0	0
	27	0	0

The charge of keeping his sheep with

30 acres of grass - -	30	0	0
Twenty acres of turnips - - -	20	0	0
Shepherd and his dog + - -	20	0	0
	70	0	0
Subtract 27	27	0	0
Loss	43	0	0

Q. 2

Now,

Now, instead of losing 43 *l.* if he kept no sheep, he would get 50 *l.* for his grafs and turnips, by selling them to others that feed sheep to fat for the butcher, or otherwise, besides having the charge of a shepherd: and then such sheep by agreement with their owner, may be obliged to eat off his turnips and grafs, by such a time, so as to have an early opportunity to plough and sow his turnip and grafs ground with grain, in due time, &c. Or take it thus:—The common belonging to this farmer's farm, is not worth above twenty shillings a year, and as he sometimes keeps one hundred and eighty sheep to fold and dress his land, he is obliged to eat his grafs and turnips off his fallow land so late, as greatly damages his crops of grain; for he cannot begin to plough his grafs land up till *Midsummer* for wheat; and then it is so late to make a fallow and three stirrees that he cannot get his land firt, and in sweet order, if much wet weather should happen, till *Allballontide*; and then, as his wheat is forced to be sown thus late, the cold weather, in course, comes on, and overtakes it in its infant growth, when, for want of a strong root, and a blady head to cover it, it is a great chance but much of it perishes. He likewise should have no sheep on his turnips, after *Lady-day*, at farthest; for, by keeping sheep long on his turnips, even till mid *April*, or longer, he can give it but one ploughing

ploughing for barley; and being so belated, if dry weather should set in, the barley may not be able to come out of the ground, but die away under a rough, clotty earth.

Thus his wheat and barley may fare equally bad: besides which, he is further subject to losses; for, as some of his ground lies in common fields, and some in inclosures, he is forced to employ a number of hurdles, and some dead hedges, to make drift ways for keeping his sheep, in their walks, from hurting his green corn.

What is put in practice, therefore, by many farmers in *Hertfordshire*, viz. to fold on their turnip ground, as soon as it is sown with seed; for, by this good piece of husbandry, the sheep close the earth on the seed, and by their stale and dung they enrich the ground, and cause the growth of the turnips to be strong and expeditious; and certainly keeps off the damage of all flies, and other insects, that may annoy and hurt the turnips in their first and infant growth. But in this management, due care ought to be taken to prevent the damage that sheep may do while they are in the fold; and that is, as they are very apt to paw and scratch up the earth with their feet, the turnip seed will, in course, be displaced and hindered growing. To remedy this, we generally, every night, at folding the sheep, scatter some turnip seed first over the

O 3

ground;

ground, which makes the seed thick enough to allow for this kind of damage; and as we carry on this sort of folding on turnips, for some time in the same field, it frequently happens, that, before we come to the end of it, the turnips are come up an inch or more high. When this is the case, we, every night, before the sheep enter the fold, scatter wood or coal ashes, over the same ground; and it not only forces on the growth of the turnips, in order to make them the largest of turnips, but it also prevents the sheep eating them. Again, in this management, it must be observed, not to fold the sheep while the weather is wet; for if this is done, they will spoil the crop instead of helping it, because they will stolch the ground, displace the seed, and tear it up, to the loss of the crop: others, again, will make use of coal or wood-foot, for this same purpose, by scattering some over the ground where the turnip-feed is sown, to prevent the sheep biting the first sprouting leaves of the turnips; but it sometimes happens, that, in a very dry season, there is no occasion for either the ashes or the foot; because, as turnip-feed may, in such dry weather, lie two, or three, or more weeks, before their sprouts appear, the fold may have time to pass over the whole turnip field, before the danger happens.

A chiltern farmer lost an hundred of his folding sheep in the great frosty winter of 1740, by

refusing to give them hay, after his turnips were rotted and spoiled by the frost, whereby he suffered by the loss of his sheep, and the folding of his ground. He kept three hundred wether sheep, for dressing his land by the fold, as it is of a chalky, gravelly, and loamy nature; which being a dry earth, he could carry on his folding it all a mild winter, to a considerable advantage, with the help of turnips and straw; he therefore sowed twenty four acres with turnip-feed, and had a very good hoed crop of them: accordingly he began to eat them a little after *Allballontide*, with his folding sheep, and folded them every night when the weather permitted it; but by the time he had eaten some off, the frost began, and set hard in, so as to freeze, and at length spoiled all his turnips, insomuch that they were not eatable. Now, this same farmer had, at that time, a stack of good clover hay by him, that contained, it was thought, about twenty loads, which he refused giving to his sheep in a small quantity, though the turnips were all rotted and spoiled, saying, he could not spare his clover from his horses and cows; and therefore gave his sheep nothing but straw the rest of the winter, even till the beginning of *April*, when a small bite of grass appeared for their subsistence, to carry on his summer folding. Thus he went on feeding his sheep with only straw out of racks, during the winter, and part of the spring season, with driving

them abroad every day, for four or five hours, about the fields, to give them an opportunity of getting a bite of grass or weeds, and to air them for getting a stomach, the better to eat straw at night in the farm yard, But this his management did not turn out to his advantage; on the contrary, he lost considerably, by this his covetous procedure; for, by confining his sheep to eat only straw, the poorest and feeblest of them pined and starved, as not eating enough to keep them alive: so that out of his flock of three hundred sheep, he lost one hundred that died by the hunger rot, which made work enough for his shepherd to skin them, for selling their skins for about sixpence or eight-pence apiece: and as to their carcasses, the fowls of the air, the vermin of the field, the farmer's dogs and hogs, were fed in plenty with them. In short, this farmer, notwithstanding he had been brought up to the farming business all his life, was so silly as to commit this great mistake, which so much redounded to his prejudice, that he was very near being seized on for non-payment of rent; whereas, had he acted the wise and prudent husbandman, he might have saved the lives of, perhaps, all his sheep, and carried on his folding all the winter and spring to his great profit, by feeding them with some hay and some straw; but if he had given them hay altogether, they would pay him well for it by the fold, by their flesh, and by their

their wool : that is to say, he should have had five or six sheep racks stand every night in his fold, that are made each of them about ten foot long, and no heavier than the shepherd could move them at his pleasure : in these there should have been put clover-hay every night, and the sheep would have fed heartily on it, after being kept all day, in the farm-yard, on straw : and thus he might have dressed many acres of his dry land by the fold, with such a number of sheep, during the winter and spring seasons, except in an extraordinary wet, and snowy time ; for it is a common saying among shepherds—That hardly any weather hurts sheep, if they have but a belly-full of meat.

Lambs in *May* should be taken off their dams, and put on a common with one or more old ewes, in order to grow and get flesh against winter. This is mostly contrary to our *Hertfordshire* practice, for we generally fold them with their ewes, throughout all the summer, which is wrong, for that their dung and urine, the fore part of the summer, is of little or no value. But if there is good baiting, enough to keep them on in flesh, they may be folded the latter end of the summer, when there is commonly meat enough on clover-lays, or in stubbles, &c. and then a little folding does a great deal of good.

A gentleman that kept above three hundred folding sheep, after he had fed them all the
winter

winter on straw in racks in the yard, and turning them out every day on the large common of *Barkhamstead*, began folding his fallow land the beginning of *April*, by feeding them in the day-time, on the said common, and giving them hay at night, in a rack or crib, in the fold, for some time, till grass grew on the common high enough to subsist them without hay.

This, a right shepherd will well observe, which is to watch his flock, and keep his sheep, as much as he can, upon their legs, for if they lie down too much, when they get up, they are apt to dung and stale; and this, in particular, they ought not to do, more than ordinary, towards night, that they may not leave their dung and stale on the common, but carry it into the fold.

The following is an account of keeping forty sheep for folding.

	<i>l.</i>	<i>s.</i>	<i>d.</i>
For forty two-toothed wether sheep, bought in at <i>Michaelmas</i> , for seven shillings a-piece	-	-	14 0 0
For three loads of hay to subsist them with all the winter, till <i>Lady-day</i> , at 30s. per load	-	-	4 10 0
For driving and attending the flock, from <i>Michaelmas</i> to <i>Michaelmas</i> , at 1s. a week	-	-	2 12 0
			21 2 0

WHEREOF,

	<i>l.</i>	<i>s.</i>	<i>d.</i>
For the benefit of folding forty sheep all the winter half-year, at 4d. a night, 182 nights - -	3	2	0
For the benefit of folding forty sheep the summer half-year, 182 nights, at 6d. a night - -	4	1	0
For wool, at two pounds and a half from each sheep, at 6d. per pound, 100 pound nett weight - -	2	10	0
Selling forty sheep at the year's end, for being fattened on turnips, at 10s. each - -	20	0	0
	29	13	0
Subtract	21	2	0
Profit gained, in one year, by keeping 40 sheep -	8	11	0

Fold them late at night, and unfold them late in the morning, first stirring and driving them about the pen briskly.

SECT. VI.

Of the Age of Sheep.

A Wether, before it is one year old, is called a lamb or teg; in the second year it is called a sherug, and has two broad teeth before; in the

the third year it has four broad teeth before, and is then called a sheep; in the fourth year it has six broad teeth; in the fifth year it has eight broad teeth, and then we call it a full mouthed sheep. Secondly, as to an ewe—The first year it is a lamb; in the second year a thaive, and has two broad teeth; in the third it is a sheep, and has four broad teeth; in the fourth year it has six broad teeth; in the fifth year it has eight broad teeth, and then it is called a full-mouthed sheep. Or take it thus:—The first year it is a wether lamb; the second year a two-toothed teg, or pug; the third year a sherug; the fourth year a six-toothed wether; and the fifth year a full-mouthed one.—The ewe lamb is so the first year; the second year a ewe pug or teg, with two broad teeth, that they put up about shearing time; the third year it is a thaive, or four toothed; the fourth year it is called an ewe, and six-toothed; the fifth year a full-mouthed one.—After this, none can tell how old a sheep is while their teeth remain all in their head, except by their being worn down. But some sheep lose one or more in eating turnips before they be full-mouthed, and afterwards by accident, which may deceive a buyer, who may think they are lost by mere age, when it is not so. This is what I say: But an ancient author gives the age of a sheep thus: Says he—If you will know the age of your sheep, look in his mouth, and when he is one shear, he will

will have two broad teeth before; when he is two shear, he will have four broad teeth before; when he is three, he will have six; and when he is four shear, he will have eight: and after these years his mouth will begin to break. For touching the evenness, and unevenness of the mouth, it is uncertain, and faileth upon many occasions— So their broad teeth, I say, a sheep puts up sooner or later, as they are bad or well kept; if kept well, they put them up sooner, if bad, later. A good ram, and kept well, will last a serviceable one till he is eight or nine years old, and be sufficient to keep with a flock of forty, fifty, or sixty ewes.

S E C T. VII.

Of Shearing Sheep.

EARLY in *June*, we generally shear our sheep; and in order to do this, we have them washed at the river for sixpence a score, and our lambs at three-pence. Then, if the weather is fair, we let them feed the same night on the common, or in a field; but, if wettish, we house them, and shear them the next day. Our price, at *Gaddeſden*, is one shilling a day and victuals, to each shearer; and, if he is a good workman, he will shear thirty four small sheep, or thirty larger, in one day. But, if we pay him by the score, without victuals, it is eighteen pence for sheep, and twelve pence

pence for lambs. If they are cut in shearing (as they often are) apply tar to the wound, and it will keep off the fly, and heal it.

We farmers, in *Hertfordshire*, seldom shear our sheep till near mid *June*, yet there are others that think this rather too late, because the weather is now generally so hot, as to give the blow-fly strength and opportunity to bite and blow, or lay its eggs on the skin of new-shorn sheep, which sometimes causes galled sore places in the pelt of this beast, to its very great torment, especially when bad workmen cut them in shearing. To prevent this, some shear them the latter end of *May*, or beginning of *June*, for refreshing their sheep the sooner, and giving the next young wool time to grow thick against the sultry hot weather comes on, the better to hinder the bite of the great blow-fly, and the scorching heat of the sun. Now there are two extremes in this management; one, that if the sheep are shorn late, the fly may hurt them; and if shorn too soon, the weather may come coldish, chill the blood of the sheep, and damage it this way.

S E C T. VIII.

Of Weaning Lambs.

The Hertfordshire Method of weaning Lambs.

THE weaning of lambs in this inclosed country, if rightly managed, gives their owners very little trouble; yet to wean them in
such

such a manner that they may receive no check, nor be stunted in their growth, is the art and care of a judicious farmer. A lamb may be thoroughly weaned from his ewe in about two months time, for in this space the ewe's milk will be gone, and the lamb forget its dam, if they are parted far enough out of the hearing of each other. This piece of husbandry we commonly put in practice about *May-day*, or six weeks before shearing time, which is about the 11th of *June*, when we put our ewes and weaned lambs together again, after they have been shorn, in order to fold both till about *Allballontide*, when the weather begins to come in hard for winter, and obliges the farmer to lay his folding aside. Now to wean these lambs from the ewes, we chiltern farmers turn them into a field of oats; but some farmers forbear weaning their lambs till shearing time, and then they are those that are designed to be kept for store sheep; and as the lambs are now weaned off, the ewes will take ram the sooner.

Weaning Lambs in Vale Countries.

In some parts of vales there are inclosed grounds, but as the greatest part of them consists in open field land, there may be many farmers that have little or no meadow ground, nor an inclosed field belonging to their farm, and therefore
incapacitated

incapacitated to wean their lambs, by feeding them apart in particular grazing grounds. In this case, they are obliged to let the lamb wean itself, which in time it will do, notwithstanding it goes all the while with the ewe; for as the lamb grows older and larger, the dam grows indifferent of it more and more, till at last it butts it, and forces it to keep off from attempting to suck longer. And thus the ewe becomes dry, and the lamb weaned, notwithstanding it keeps the sheep company in a fold, and out of a fold; for after a lamb is a month old, many fold it with its ewe on their open field land. The case, also, is somewhat the same, where they have some inclosed ground in a vale country; for though by this means they may separate their ewes with their lambs, from their dry sheep, yet after a month or five weeks time, they let the lamb go with the sheep till it weans itself.

S E C T. IX.

Of Suckling House Lambs.

WHERE house-lambs are suckled, they must have hay, or turnips, or rapes, provided against winter, for the winter subsistence of the ewes, or else there is no such thing as carrying on this business to profit. Indeed, where there is no ploughed land belonging to a farm,

farm, and it consists, altogether, of inclosed natural grass-ground, by the only help of grazing the ewes, in summer and autumn, and giving them hay, in hard weather, suckling of ewes may be carried on to profit; but after their grass is eaten up, they can go on no longer, for hay alone will not do. Whereas, the plough-farmer, by the help of his artificial grasses, or their hay, and his turnips, or rapes, can carry it on all the year. On this account it is, that many of the *Middlesex* meadow-farmers suckle and fat every year great numbers of house-lambs, but not near so many as the *Hertfordshire* plough-farmers do.

I know a *Hertfordshire* plough-farmer, who carries on the suckling of house-lambs all the year; he rents a farm of a hundred a year, situated at three and twenty miles distance from *London*, consisting of inclosed fields of arable land, and but little meadow; the whole containing above two hundred acres, lying high and dry, of a pebbly, gravelly, loamy, poor nature, that in dry summers returns thin crops of wheat, barley, and other grain. But his meadow ground, that lies by a river's side, although it bears a coarse grass, yet it seldom fails of a good burthen on it. This summer, 1747, being a wetish one, he had a tolerable good crop of about fifty acres of wheat, forty of

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barley, fifty of oats, one acre and a half of white pease, fifteen acres of turnips, and twenty acres of clover, and raygrafs, and trefoil, sown all together, which with fifteen acres of fallow land, twenty acres of meadow ground, makes in all one hundred and sixty one acres, besides forty of old, lay ground, or worn-out clover and ray-grafs; all which maintained nine horses, six cows, and one hundred and forty ewe sheep and lambs, besides three rams and swine; and as most of his gravelly ground does not agree with clover, so well as with trefoil and ray-grafs, he trusts mostly to the two latter for a crop.

The better sort of his land he lets lie under artificial grafs two years, before he ploughs it up, to sow corn on it; the worst sort remains longer; here he sows some *French* wheat, for breaking it at the mill, and fattening his swine with it, &c. Some rye he also sows, for that this sort of land bears both these grains well, but sows not much of them; for though they both agree well with gravelly land, yet they are great peelers, and impoverishers of it. After this artificial grafs has been fed, or mowed, more than one year, if he gives the land two ploughings, he sows it with wheat-seed, in fitches or two bout lands; but if he gives it only one ploughing, he harrows his wheat-seed in, and relies chiefly on the freshness of

of such lay ground, for a good crop of grain; for this farmer bought seldom any manure, or dressing for his land, notwithstanding he had abundantly more than his dung could dress.

The reason was, because he came on this large farm, at first, in narrow circumstances, and therefore was not able to buy foot, rags, horn-shavings, or other assistance from *London*, as many other *Hertfordshire* farmers do, for enabling his hungry, rashy, gravelly land, to bear full crops of corn, &c. which had he been able to do, he very probably might have got much money. It is true, that such poor, hungry land requires rather a double dressing, for returning a great crop of corn.

Then, indeed, when it has such a plentiful assistance, no land yields more grain on it, in a wettest summer, as I find by experience, having one of my fields of the same sort of soil, which we call kerning ground; he likewise sows some wheat-seed on the same land his forward turnips are eaten off, and is a very good piece of husbandry, because the same ground being ploughed fine and dressed for a crop of turnips, and hoed besides, when it is ploughed up in *December*, *January*, or *February*, for sowing it with wheat, it may be in sufficient heart to bear a very good crop of it, especially if it be assisted with dung,

just before sowing. In 1747, I had an admired crop of dame wheat sown, after this manner, on the 20th day of *March*.—The third way of his sowing wheat is on some fallow ground.—As to his barley crops, he commonly sows this seed on only one ploughing, after his latter turnips are eaten off; his other grain as usual.—He, also, every year mows some of his artificial grass for hay, and so he does some of his meadow grass, for the same purpose, to feed his ewes with in snow, and other hard winter weather. All which shews the excellency of the suckling art; for as a rich tenant is not always to be got, rather than such a farm should want one, a poor tenant is to be accepted, and a poor tenant could not pay his rent here, if he did not suckle house-lambs on it, as this tenant did, who owns that this very branch of his farming chiefly helped him to do it; for that his crops of grain, in this pebbly, gravelly, hungry land, in a dry summer, were of little value. The next thing I have to write on is, to provide convenient coops, and a large sheep room, for carrying on the suckling of house-lambs.

Without convenient coops, or lamb-pens, to keep suckling lambs in, and a sheep-room for the ewes to be suckled in, there is no such thing as suckling house-lambs to profit, because convenient-

cy,

cy, in this respect, is great part of the work; for suckling the before mentioned number of sheep, the farmers employ four several coops or pens, and one large suckling room, for the ewes to stand in, till they are suckled; the four coops, or pens, join each other in a row, with a door to every one of them, to open and let out the lambs, by degrees, into the suckling room. Three of these pens are each of them about — feet square; the fourth as big as two of them, and the suckling room bigger than all of them; now the use of all these four pens, and sheep-room, is as follows, viz. One pen is for the oldest lambs, the second pen for the next oldest, and the third pen is for the youngest lambs; but the fourth pen is for two uses, one of which is, that as the shepherd, and his assistant boy, suckles four lambs at a time, when these of the oldest sort are suckled from out of their little pen, they are for the present put into the large fourth pen; and when four more, of the oldest lambs, are taken out and suckled, they are likewise put into this large pen, and so on, till all the oldest lambs, out of one pen, are suckled, and then returned into their own little pen, from whence they were at first taken out. Then the shepherd begins to take four lambs out of the second pen, and suckles them, and when suckled they are put into the large pen, and so on, till all out of the

second pen are suckled, and returned into their own little pen; and thus the shepherd serves the lambs of these two pens, by which mode of suckling, every lamb is kept to its own pen.

But to be more particular in this my account of suckling house-lambs, I have to observe to my reader, that at eight o'clock at night, all the year long, they bring out of the field only the dams, or own mothers, of those lambs, that are at home, and put all of them into the large sheep house, to lie all night with all the three sorts of aged lambs, except a few of the very youngest and weakest lambs, which are confined all night, in the fourth or largest pen, to lie with their own dams; and this is done, because if they should be let out, and kept in the sheep-house, among the rest of the older lambs, it is a chance if some of them do not come by some hurt by being trod on.

Next morning, when the shepherd enters the sheep-house, he examines all the bags, or udders of the ewes, to find out if there be any milk left in them, which he easily discovers by feeling them; and if there is, he then takes a lamb, that he thinks has not had a belly-full of milk, and puts it to that ewe for draining and drawing her bag dry, and so any other ewe, in the like condition; for if this practice is not strictly observed, and any ewe is drove to the field with
milk

milk in her bag, the consequence will be, that milk, thus left behind, tends much towards drying the ewe before her due time. At eight o'clock, the same morning, the shepherd brings in the sucklers, or what we call mothers-in-law, out of the field, when the shepherd and his boy lets out from the pen, four of his oldest lambs, at a time, to suckle two sheep, one lamb on each side of a sheep; and after these four have filled their bellies, they are put into the great pen, for the present, and four more let out to suckle as the first four were, and so on, till all the oldest lambs are suckled, and returned into their own little pen.

Next he suckles the second oldest lambs, in the very same manner, and while any of these two sorts of aged lambs are suckling, and they do not stand still, as they should do, the shepherd and his boy are forced to gripe each unlucky ewe pretty hard by its jaw, and if this does not quiet her, they pinch some part of the ewe's face, or ear; for these aliens are oftentimes very untoward in suckling other lambs than their own. Thus when these mothers-in-law are suckled, they are drove to the field, and at twelve o'clock the dams, or own mothers, are brought home, and suckled, as they were at eight of the clock the last night, by all the three sort of lambs, that are turned into the sheep-house promiscuously, ex-

cept the youngest lambs of all, as I before observed; and after they have been suckled and examined, and their udders cleared of all milk, the lambs are separated, and returned every one to their own proper pen, and the dams drove to the field.

At four o'clock in the afternoon, the sucklers are brought home again, and suckled by the two eldest parcels of lambs, for the youngest sort of all suck none but their own dams, or mothers, for the first fortnight or three weeks, as aforesaid. Then at eight o'clock at night the dams are brought from the field, and lie with the lambs, till next morning, as I have before given an account of.

I am likewise to observe to my reader, that in suckling the two sorts of oldest lambs, the shepherd has always one large hurdle, with a little door made in the middle of it, to keep the ewes confined to one part of the sheep-house, or room; and as the ewes are let out of this door, and suckled off, he moves this hurdle further in, to keep the unsuckled ewes the closer together, that they may not have room to turn about; for the less they stir, the less they will waste their milk.

Again; I have further to observe to my reader, that though I here mention a boy, assistant to the shepherd, it is because of this large number of suckling ewes, for such an assistant is not allowed

ed but upon an extraordinary account. One good shepherd is very capable of suckling and managing an hundred milch ewes, or more, alone, provided a person is employed in the field to pick up turnips, and remove and shift the hurdles that part those turnips that have been fed on, and those that have not.

A shepherd that is hired to suckle house-lambs, in some large suckling farms, is accounted the best, or next best, necessary servant a farmer has, and accordingly has wages allowed him. It is true, that as a ploughman is commonly seedf-man withal, there is little difference in the wages of him and the shepherd. In a large farm that has much ploughing, and suckling of lambs, the common wages of either is six or more pounds a year, in *Hertfordshire*; and I am of opinion, that a right true servant, of both sorts, where there is full business for them, is better worth ten pounds a year, than some ignorant, negligent ones, are of half that money; for if a suckling shepherd is a lazy fellow in rising early, careless of suckling his lambs in due time, and so in several other branches of this his undertaking, he may cause a suckling farmer to lose money instead of getting any. But if he is a diligent, vigilant servant, he will rise time enough to drive the ewe dams to the field, at four or five of the clock, every morning, winter
and

and summer; and when he drives them, he will take care they travel gently; for as some fields, in some farms, lie near half a mile from the house, and the ground is of the gravelly sort, if those sheep are drove too fast, and too near together, their feet will soon have the destructive foot-rot, and their bodies surfeited to a dangerous scabby degree, and which perhaps will not only cause the ewes to lose their milk apace, but bring them under a hazard of losing their lives, and prevent their lambs fattening.

A good shepherd will move his row of hurdles, and give his ewes a fresh bite of clover, or other artificial grass, or green thatches, or rapes, or turnips, or rye, in due time; he will oversee his fields, and stop all gaps in hedges, before any of his sheep get out into neighbouring fields, and always prevent them doing any damage, that may bring his master under any expence; he will pick up those offal turnips that the sheep leave behind them, as they advance in feeding on fresh ones, and force them to eat their leavings. He will, also, give the ewes and lambs their meat and litter enough, at home, in right season.

He will inspect his ewes bodies, to see if, in hot weather, there be any maggots bred on them; if they have, he will apply a proper remedy to destroy them, or else they will destroy the sheep.

He

He must be one that has judgment enough to know if his ewes have milk enough to fat the number of lambs that suck on them, and when they are fat enough to sell; he should be one that has knowledge enough to buy in right sound sheep, and to sell them off when they are worn out, and unfit for further service.

A good shepherd should be one that understands how to relieve and help a ewe that is under a difficulty of lambing; for it often happens, that those ewes in particular that feed on turnips, have overgrown lambs, and then they generally require manual operation to bring forward the lamb, otherwise the length of pain may so fatigue the ewe as to kill her. Again, it may happen that a ewe has received some damage by creeping through a hedge, or by fighting with another ewe, or by the push of a cow's horn, or otherways. In any of these cases, a shepherd's timely skill and help may save that ewe and her lamb, that without such assistance might have died.

It does not suit the conveniency of a suckling farmer to breed his own ewes, because the meat that must be employed to bring them up, would be necessary for feeding the suckling ewes to a greater profit; and as there are no ewes so valuable, for the service of a suckling farmer, as the *Dorsetshire* breed are, it is mostly to his interest to buy this sort, as they are the very best of twin sheep,

sheep, I mean for bringing twin lambs; for in this one branch, lies the main part of a suckling farmer's gain. For that suckling farmer whose ewes do not bring twin lambs, is short of his business; at least, if half or three quarters of their number do not do it, and this twice a year; for herein, as I said, is a chief part of his profit.

And for this reason it is, that the west-country farmers make it their business to keep rams and ewes that bring these twin lambs, by which the suckling farmer is at the charge of keeping but fifty ewes, for having an hundred lambs; and to help him in suckling such a number, he takes care to provide himself, in time, with a sufficient number of alien or bastard ewes, or mothers-in-law, to support the dams or own mothers with milk enough for the purpose; and when a suckling farmer is once master of a flock of such *Dorsetshire* white-faced ewes, that bring twin lambs, he ought to keep them up in the best of living, for giving the most milk, and causing them to take ram time enough to bring lambs twice a year; the first time between *Michaelmas* and *Christmas*; and for these reasons he buys in two-toothed, or better four-toothed ewes, in order to breed twin-lambs, and to continue breeding and suckling for three or four years, before they are worn out; for these twin breeders seldom last longer

longer than that time in right order, therefore the suckling farmer commonly sells them off to other farmers, when they are got full-mouthed sheep, to breed more lambs for their fold use, or to fat for the butcher before they become broken-mouthed by age.

A ram should be bought in at two or three years old at farthest: and if a farmer keeps about an hundred of these west-country suckling ewes, he should also keep two or three rams of the sort I have described. Rams should be kept from the dam suckling ewes, till their lambs are sold off, else they may take ram too soon. That is, if the dam ewes should take ram quickly after they have lambed, it would lessen their milk too soon; therefore, if those ewes that lambed in *October* or *November*, take ram in *December* or *January*, they may lamb in *April* or *May*, to the farmer's best profit; for a ewe goes one and twenty weeks in lamb.

West-country ewes are many of them brought up, and bought for sucklers, between *Michaelmas* and *Christmas*, some in lamb, others with lambs by their sides, that were lambed in travelling, or which are very young indeed; those that are to lamb, when bought by a suckling farmer, are generally lambed abroad. If a plough-farmer has any meadow belonging to his farm, he commonly lets his ewes go here for their lambing the drier,

drier, and here are let to remain two or three days or a week, if the weather is mild; but if otherwise, they then bring the lambs directly into the house, which they account better management than to let their ewes lamb in a dirty ploughed field, that might endanger the lives of the lambs. Ewes, as I have before observed, are liable to many hurtful accidents, especially when they feed in inclosed fields.

In *Hertfordshire* and *Middlesex*, where the suckling of house-lambs is perhaps more in practice, than in all *England* beside, the shepherds are not obliged to watch the ewes in the night-time abroad, in the lambing-season, to prevent their lambs being killed, and carried away by foxes; for although this may (as is very uncommon) happen, yet the damage on this account is not so great here, as to cause a shepherd to remain and watch in the field all night, purely for this purpose, as it is every year done in some parts of the sandy counties of *Suffolk* and *Norfolk*, because in these counties, there are many plantations of broom and furze, or whinns, that for increasing their growth into bulky, high stalks, to make them the better fuel, they let them grow to seven, eight, or more feet high, which gives such secure shelter and protection to foxes, that without such watching their new yeaned lambs, they

they would have them all destroyed by these vermin.

I know of but one place in *Hertfordshire*, where such watch is kept, and that is between *St. Albans* and the town of *Hertford*, in some of the large fields of a great farm, where is a little, moveable, boarded hutt, kept on four wheels, that is easily drawn about, for a shepherd to remain here in the night-time, as well as the day, during the lambing season, not only for preventing any damage by foxes, but more for guarding the sheep and lambs from being hurt, and killed by dogs, and for aiding and assisting ewes in the difficulty of lambing; for expeditiously reducing a sheep, if hived by feeding on turnip leaves, or on clover; for bleeding a sheep, in time, that falls, or is like to fall by a plethory of blood, and for the better hindering their straying.

A farmer having natural grass ground, as well as ploughed ground, he is compleatly furnished for suckling house-lambs, because he can feed his ewes on artificial grass, or natural grass, or on turnips, rye, or cole-plants, by which diversity of foods, the ewes must consequently keep in good flesh, in good health, and yield the most milk. This man always had three sorts of aged lambs by him, fattening; the eldest had the first head of milk, the next age followed, and the youngest had their leavings. This farmer
never

never bled a house-lamb but once, and then he did it by cutting off a bit of its tail, and when he had a mind it should bleed no longer, he tied a piece of thread, or shoemaker's end about it, and this he constantly did the night before the lamb was carried to market, where if he made a guinea of it, it was a top price indeed, for the general price was fifteen or ten shillings; then when the ewes own lambs are sold off, they become alien ewes, or mothers-in-law, as they usually call them.

This farmer's way is to give the lambs fresh wheat-straw, twice a day, in a rack, and what they leave is taken out, and serves to litter them with. By the opportunity of a farmer having ploughed and meadow ground, he has the advantage of that farmer who only suckles on meadow grass, and this in several branches. The meadow farmer is obliged to shut up his meadow in *April* at farthest, and then to give over suckling, so that it is about *Michaelmas* before he can begin again to suckle, on his after-meath grass.

Then if his ewes are not forward enough in lamb, he must buy in the western sort, in lamb, or with lambs by their sides, and pay a good price, even, perhaps, above a guinea a-piece; however their forward lambs make partly amends, by selling, in *November*, for near twenty shillings a-piece;

a-piece; for, as the winter and spring advances, both ewes and lambs sell cheaper.

A fat lamb, before *Christmas*, will sell for fifteen, or more shillings, when one in *February*, *March*, or *April*, will fetch hardly more than ten or twelve; however, if a suckling farmer manages well, he need not fear selling his lambs, all the year, one with another, for ten, twelve, or fourteen shillings a-piece, at seven, eight, or nine weeks old, or more.

Of various sorts of trough-meats, to be given to house-lambs, while they are fattening for market.

House-lambs require some other assistance than what their dams, or the alien ewes, give by daily suckling them; therefore that farmer, who carries on the suckling of house-lambs, without giving them dry meat, in a trough, I am certain cannot do it to profit, because the more they eat of this the less they will suck; and the less they suck, the further the sheep's milk will go; besides which, a proper trough-food not only becomes very agreeable to them, by way of change of diet, but it, also, becomes very serviceable, on account of its preventing their scouring; for if house-lambs are taken with a scouring, it backwards their fattening; and for ought I know, a violent scouring may become contagious, and one lamb may infect many. Wherefore it has

employed the study of many to invent such a trough-meat, for feeding suckling house-lambs, as will the most expeditiously conduce to their fattening, and to the whitening of their flesh; and it is to these two valuable ends, the following experienced receipts are offered for the greater choice of those who fancy one better than another.

The first Receipt for composing a trough-meat, to feed fattening house-lambs with.—About Watford, and some other parts in Hertfordshire, several farmers mix fine oatmeal with fine powder of chalk, and put it fresh and fresh into troughs, that always stand fixt before the lambs, for them to feed on at their will.

A second Receipt.—Others think it better to give whole oats, in a mixture with powdered chalk.

A third Receipt.—I know a farmer that lives about two miles from Hempstead, in Hertfordshire, that prefers the feed of blue pease to all other trough-meat, believing that as this sort is softer than any other sort of pease, they are more nourishing than the white, the grey, and all others; therefore he gives a few of these blue ones, in a trough, at a time, without mixing them with any thing else.

A fourth Receipt.—At Hendon, in Middlesex, where they suckle house-lambs, that suck ewes,

ewes, that are always kept on natural grafs, they mix pollard with fine powdered chalk, and give it in a trough, as thinking this mixture a very agreeable fort; but now and then add a few oats.

A fifth Receipt.—At *Hendon*, aforefaid, another farmer is of opinion, that a mixture of flour of wheat, with oats, is a better feed.

A sixth Receipt.—A great fuckling farmer, near *Rickmansworth*, in *Hertfordshire*, gives his fuckling house-lambs clean, small white peafe of the *Essex* roading fort, in a trough alone, and sometimes he mixes powdered chalk with them, and sometimes barley-meal; but of late he has left off giving them any barley-meal, because it is apt to stick in their teeth. Once a day he gives a parcel of these white peafe.

A seventh Receipt.—As practised by a fuckling farmer who lives about two and twenty miles distant from *London*; he gives whole white peafe in a trough mixt with long bran; and pieces of chalk, besides, are laid for the lambs to come at, to lick, and eat; and sometimes he has the peafe broke or split first.

An eighth Receipt.—Another gives their fuckling house-lambs whole wheat in a trough, and for change now and then some blue peafe.

A ninth Receipt.—Another gives ground malt, sifted and mixed with pollard, in a trough.

At *Lay-hill*, near *Chebbam*, in *Buckinghamshire*, about four and twenty miles from *London*, there lived a small farmer that suckled house-lambs, for eight or nine years together, at different seasons. He commonly began suckling about *Allballontide*, and ended at *Whitsuntide*, because, he says, grass-lambs come then in plenty, and make house-lambs of little value. He first fed his ewes with turnips, and after they were eaten off, he fed them on with rye and oats, that were sown together, between harvest and *Michaelmas*; and after this green meat was eaten off, he fed them on clover. Some, he says, sow thatches at *Michaelmas*, to eat them green, in the spring, for this purpose.—As to the trough-meat that he fed his house-lambs with, he boiled whole wheat, and put it into a trough, then sprinkled wheat flour over it, and the lambs would eat it apace; he says, he never could find any trough-meat exceed this, and he has tried barley-meal mixed with gin, and crammed the lambs with it, and so other things; but having near killed one lamb, with his crams, he soon gave it over. This wheat trough-meat consists in two things; one, that it fats with expedition, and the other, that as it is a soft meat, it produces a soft flesh, which is one great means to tempt a butcher to buy a house-lamb; for if the flesh of it feels hard, as it does when fed with white pease, they do not
so

so well like it; but when it feels softish, they account it a sign that the lamb will die with whitish flesh.—Then he takes a little blood from each lamb, the day and night before he carries them to market, by cutting off a bit of its tail, and does the same at the *Rose*, or *Ram-Inn* in *Smithfield*, just before he exposes them to sale, and never does more than tie the end of it with a straw.

As I am, this year, 1748, surveyor of our highways, I was in company with another surveyor, at our sessions, at *Hempstead*, who told me, he occupies but twenty acres of ploughed land, the rest of his farm lies in grass, which gives him an opportunity to suckle fifty ewes for fattening house-lambs; and told me, that oatmeal is a good trough-meat for helping out milk and fattening the lambs; but objects, and says, it is too dear a feed, therefore he has tried wheat, and given it in a trough, as it comes roughly ground from the mill, with the bran in it; and when he gives this, he puts some whole wheat among it; for, as he says, if whole wheat is given alone, it will cause the lambs to scour, and if they scour, unless a remedy will presently stop it, the profit is generally lost.

S E C T. X.

Of Commons for feeding Sheep.

MOST chiltern countries have hard-bot, torn ground, and is in many places very stony, and hilly withal; if the sheep are drove too fast here, especially against the ascent of hills, a whole flock may be soon ruined. It is the case sometimes of me and my neighbours, to have our flocks drove every morning, part of the summer, to *Barkhamstead* large common; the nearest part of which lies from our farthest farmer's a mile and a half; so that his flock walks every day three or four miles before they are folded. Now, if such a flock is driven too hard, they would soon be drove off their stomach, their feet made sore, and their bodies infected with dangerous distempers: happy are they who live near a large common for feeding their flocks, free of that fatigue, which many are obliged to suffer, who live one or two miles distant from a common; as I have known some to do, and yet are forced to drive their sheep every day to it.

S E C T. XI.

Of the Shepherd.

A Good shepherd, is one that will attend his flock early and late, and will drive them leisurely,

surely, will chuse the best spots of ground for feeding his flock on; for there are some places even in the space of a mile, that will rot sheep, when others will not; and this in a hilly chiltern country. So in vales there are thousands of places that will rot sheep, if a shepherd is not very careful to avoid them when it is in his power. A good shepherd, with the help of a well taught dog, will prevent his flock breaking into ground where they may do damage: for, as in the open fields there is little other living for their largest flocks during most of the summer season, than what grass they can pick up, as I said, on butts or head-lands, roads and lanes, that lie contiguous to corn-lands; so in chiltern inclosed countries, whole flocks are feeding on turnips, clover, or rapes, if a shepherd is not vigilantly careful, he may lose part of, or a whole flock of sheep in less than an hour's time. A good shepherd should not only be endowed with these qualifications, but also those that nearer relate to the life and death of sheep and lambs. For example, he should be a judge when a sheep is taken ill, of the nature of its distemper; and when he has discovered it, how to apply a proper remedy for its recovery. A good shepherd will keep his sheep from going among bushes and briars, and breaking through hedges, to the loss of their wools,

and the casting their lambs. He will, in what in him lies, prevent his rams and wethers fighting to their damage; he will fold them in due seasons; he will not keep them too long on one spot of ground; he will tag his sheep at the beginning of their want; in lambing time he will watch, if occasion be, by night and by day, for assisting the ewes, and succouring their lambs in hard weather.

One of my neighbours, a yeoman of an hundred a year landed estate, in the year 1744, kept a boy for a shepherd, out of covetousness to save wages, but lost good part of his flock of sheep by it. For this indiscreet boy, being obliged every night to drive his flock from off *Gaddeſden* common, down a long steep hill to the field; he with some other boys that usually attended him as playmates, took delight to run the flock down this hill in such a full speed, that, by the time the sheep came to the bottom of the hill, they would blow and pant to that degree as to be hardly able to stand: and thus our wild shepherd went on, till a neighbouring farmer, seeing some of his sheep among this flock thus abused, he thrashed the youngster so well, as to break him of all such ill-using the sheep; so that afterwards they were as leisurely drove to fold as any other farmer's. Hence it is, that a diligent skilful

ful shepherd, in some farms, is valued as the chiefest servant; for it is the real case of a thousand farmers, who depend mostly on their sheep to dress their land, and return them wool to pay their rent; and if these fail, many will tell you, they shall be undone.

A shepherd caused twenty out of forty ewes to cast their lambs, by his ignorant management in breaking his dog. This was transacted within two miles of my house, where a farmer lived that hired a shepherd, who having an unbroke dog, took a great deal of pains to break him, and in breaking him, was so stupendously silly, as to harass, fright, and run a whole flock of sheep about from place to place, in learning the dog to side, to round, to stop sheep, &c. by which imprudent action, he caused twenty ewes to cast their lambs, out of forty that were kept among wether sheep for the fold use. It is such unskilful shepherds as this, that spoil a whole flock; by hunting, throwing dirt or stones at some, haring and driving the sheep out of breath, and almost off their legs; preventing ewes to take ram, and making those that are in lamb to cast them before their natural time; surfeiting them, or breeding maggots on their skin, bringing them under the scab, black or white scour, the red-water, and oftentimes death itself.

S E C T. XII.

Of the Method of Valuing Sheep.

A Sheep, but no other beast, will weigh double its carcase, when put into a scale alive, by which a near guess may be made of its value. But this method will not answer as to bullocks, or calves, because the skin of these is sometimes worth two-pence halfpenny a pound.

S E C T. XIII.

*Of their Wool.**The Nature of several sorts of Wools.*

THE *Herefordshire* wool. On the *Licky* hills, and about *Lempster*, their wool is reckoned the finest in *England*, and is one of the chief perfections of this county. Here they commonly tod twenty-six or more fleeces, which with a mixture of *Spanish* wool, makes the superfine broad-cloths at *Cirencester*, and other places in *Gloucestershire*.

West-country wool. This tods eight or nine fleeces, and is thought to be the next best to *Lempster* wool, as is that also off the south downs in *Sussex*. A middling western ewe, that was fed in *Hertfordshire*, cut three pounds, and three pounds and a half, the first four years she lived here;

here; after that she declined in quantity, till she was fifteen years old, and then she returned a fleece of only one pound and a half. A western sheep, brought into our parts at three years old, cuts better wool the first year, than she will ever after; because the short grass, that grows on their dry, large, open downs, is much sweeter than ours in *Hertfordshire*. There are some western sheep that cut four pounds of wool each, that is so thick and curled, that if a pail of water is thrown over it, it will nearly run all off presently; and, when wool grows in this manner, it is commonly very fine. The *Maiden* downs, near *Salisbury*, have a wool worth a guinea a tod, when ours in *Hertfordshire* is worth but half as much.

Buckingham and *Hertfordshire* wools, &c. In parts of the vale of *Aylesbury*, by the delicate feeding and folding their sheep in open, airy fields, their wool sells for three shillings a tod more than ours in *Hertfordshire*; because their commons have a most rich bottom, clear of every thing, but a pure grass, that is impregnated with such a spirituous sap, as will fat a beast on the shortest bite, in the driest summer, provided it can come at water enough; which is what we cannot say by ours in *Hertfordshire*, because most of our commons have furz, fern, and heath or ling growing on them, by which, and the

the bite of the hedge-leaves, and folding our sheep in inclosed fields, our wools acquire a coarse nature, but not so coarse as the *Norfolk*, where their sandy soils, and foul commons, are the cause thereof.

Leicestershire wool. Often tods are four, five, or six fleeces. It is a heavy, cloddy wool, as thick at top as at bottom, and is good for making callimancoes, shalloons, yarn, and stockings.

Lincolnshire wool. This rather out-does *Leicestershire*, in the weight of the fleeces. Their great sheep have their belly and legs almost naked; and as they are the largest of sheep, for being fed in salt and fresh marshes, their flesh is more spungy than that fed on a shorter bite; yet it may be called good mutton, and does considerable service, by supplying the *London* markets in great quantities, and thereby keeping down the price of others. This wool is a very long, coarse, spiry sort, not so thick at bottom as at top, that serves to work into baiz, fays, &c. at *Colchester*, *Bocking*, *Braintree*, and other places.

Welsh and *Scotch* wools. Are accounted the worst of all the *British* sorts, because these have a coarse top, and a hairy bottom; its middle part is serviceable for making ordinary *Yorkshire* cloths, that are sold from twenty pence to thirty pence

pence a yard; but their small mutton, when fatted at a right age in sweet grass, is fine. A sheep, from three to seven years old, sheers more wool than before or after.

Dutch sheep, being a very large sort, often bring two or three lambs at a time: but their wool is coarse.

Turkey sheep, have a large heavy tail, and, from their gross feeding, a coarse flesh, and a rough hairy wool; and the worse, because in their hot country, they often breed by goats.

Of *Lambs-wool*, &c. Lambs-wool is valuable for several uses; for this makes felt-hats in *Worcestershire*, and other parts; serves to quilt petticoats, and fill coarse ticks for bedding instead of flocks; as the *Spanish* wool that is but an inch and a half long, with the help of beaver-fur mixed with it, does in making beaver-hats.

It is observed, that great poverty of sheep, and a rainy season that directly succeeded their sheering, has caused even that short wool, left on them at sheering-time, to peel off quickly after, when I was bid, at that time, by the same wool-buyer, fifteen shillings and sixpence a tod for my wool, from sheep much better kept and managed; for a good winter's keeping not only gives sheep the better fleeces of wool, but likewise preserves them in health, when many of the
poorer

poorer sort die; for if a beast will not pay keeping fat, it will not pay keeping lean.

Of the quantity of sheeps wools.—A wether-pug, or two toothed sheep, which is one in the second year of its age, that went amongst a flock of others, not being shorn the first year as a lamb, the next year cut a fleece of wool weighing seven pounds.—Another sheep of the same age, having been brought up the first year as a cossart lamb, that is to say, in and about a house, and not being shorn till the second year, it cut a fleece of wool weighing ten pounds without washing, which is not more to be wondered at than the last; for as this sheep was the first year kept by one *John Johnson*, a bricklayer, in the town of *Leighton*, in *Bedfordshire*, and went about the streets when he would, it is to be supposed, that its fleece carried in it such a quantity of dirt, as must help to make this extraordinary weight. Our *Gaddeſden* folding-sheep commonly cut fleeces that, one with another, generally weigh two or three pounds a-piece; but these do not come near up to the weight of the *Oxfordshire*, *Leicestershire*, and *Lincolnshire* great poll sheep, some of whose fleeces weigh six or seven a fleece. There was a large poll ram, kept many years by a gentleman living at *Norchurch* common in *Hertfordshire*, that, in its prime of age, cut a fleece weighing ten pounds.

*The Value of Sheeps Skins, Sheeps Hoofs, Sheeps
Horns, &c.*

One Mr. *Shilburne*, who formerly lived at *Ivinghoe*, and rented the Groves, which are meadow grounds of some of the richest sort, then belonging to the earl of *Bridgewater*, fed a parcel of such large sheep, that he sold forty of their skins for fifteen pounds, when wool sold well, which is seven and sixpence a-piece, four of which were supposed to weigh a tod. Some say, three skins have weighed a tod of twenty eight pounds, when others of the smallest *English* sheep, that carry the finest and shortest wool on their backs, have had four or five and twenty fleeces to weigh a tod.

*The Difference between the Wool of well-fed sound
Sheep, poor-fed sound Sheep, and rotten Sheep.*

The wool of sound sheep is well known to differ in goodness according to the nature of the sheep, situation of the country, the feed, and the air, &c. of the place. The middle sized, close-wooled, western sheep, and so others of the *English* sort that feed on downs, hills, and on open commons, and open fields, in the southern parts of *England* especially, generally carry on them the finest and best of wools: but let sheep feed any where, if they have a well-fed, sound body at sheering time, or when it is killed, the wool of such sheep

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will

will work well alone, into cloth; but when a sheep's body is rotten at sheering-time, or when it is killed, the wool of such sheep is too weak to work into cloth alone, because it will break in working. Hence it is, that, when such rotten sheep are exposed to sale in a market, a skilful buyer, to prevent his being imposed on, pulls off some of their wool; and if he finds it part easier and freer than ordinary, he concludes such a sheep to be rotten: wherefore when wet seasons happen so as to bring great numbers of sheep under the rot, the wool of such rotten sheep is mixed with the wool of sound sheep, for making it endure working into cloth; but then what must be the condition of such cloth? why, it must deceive the buyer and wearer of it; for, as such rotten wool is held together and worked with sound wool, the cloth must be better or worse in proportion to the quantity of rotten wool thus made use of. So the wool of sound sheep is better or worse, as their feed is: the wool of a well-fed sound sheep, is much better than the wool of a half-starved, poor, sound sheep; for the wool of such poor kept sheep is deemed little better than the wool of a rotten sheep, as it is not very easy to know one from the other when they lie in fleeces; because the wool of a poor sheep, like that of a rotten sheep, is of so very weak a nature, that there may be little or no difference

between the one and the other. Thus there are degrees of goodness and badness in the wools of sound and rotten sheep, for making of cloth. Again, as sheep die more or less rotten, their wool is put to those uses, the artist best knows will agree with it: for when wool comes off a sheep thoroughly rotten, or if a sound sheep dies naturally of some disease, their wools are generally made use of for blankets, bays, and waddings, &c. which employ the coarsest of wool.

One pack of wool, made into broad-cloth, will employ fifty-eight persons for one week, who will earn nineteen pounds eight shillings. One pack of long combing-wool, in fine stuffs, serges, sagathies, camblets, &c. 158 persons in one week, thirty-three pounds twelve shillings. One pack of wool in stockings, &c. 150 persons one week, fifty-five pounds. In the whole, 366 persons, in one week, will earn one hundred and eight pounds in employing three packs of wool.

It is computed, that *Great-Britain* produces, yearly, 500,000 packs of wool, and *Ireland* 300,000, at 240 pounds weight each, in all 800,000: out of which, allow, for home consumption in *Ireland*, 100,000 packs; then remains, wrought up in *Great-Britain*, 700,000.

If a dead sheep is found before it is tainted too much, it should be directly brought home, and, being at home, it should be skinned and

quartered: the skin and wool of such a sheep may be sold from four-pence to a shilling, though the best skin of a large sheep, killed by the butcher, is commonly, at the highest price, worth but eighteen-pence.

S E C T. XIV.

Of their Distempers.

The Rot.

IF floods of rain happen in winter, frosts frequently follow, and dry up the waters in a little time; in winter the grass is so short, and its flashy nature so little, as makes it prove of the less danger of rotting sheep; but if it is high enough to do any mischief this way, as sheep generally eat hay at this time of year, it much lessens the danger; for in vales, it is their custom to begin giving their flocks hay in *December*, to supply the want of grass, and for keeping their sheep in better health; so that they are under little or no concern about any winter-rot, except the hunger one: on the contrary, they have great reason to fear the ill effects of a summer-rot, or to be plainer, a *Midsummer* or a *Michaelmas* rot; because summer floods force grass to grow rank and flashy in the water furrows, between their ridge ploughed-lands; which, by this means, being tainted by the wash of dirt running down on them, from the sides of the ridge-lands, the
grass

grafs not only becomes full-furnished with a raw unhealthy sap, but the dirt that the sheep eat by taking in such grafs, corrupts their blood; for even dirt of itself, when received into the body of a horse, cow, sheep, or deer, in a large quantity, will certainly breed the rot in their bodies; and the more, when such dirty grafs is of the more filthy sort, as that certainly is, where many cattle live upon and about it: and thus such tainted grafs brings on a rot in sheep and lambs, as the case was by the long heavy rains that fell in *June* and *July*, 1747, whereby great numbers of vale sheep became rotten. And hence it is, that the vale farmer says—A rotten year of sheep, a dear year of corn—because if floods happen in summer-time, while the corn is in its green ear, the rains are apt to beat it down, as it did this time, when the wheat and barley fell flat before it kernalled and bloomed; so that their kernels became lean, and in some places lost near half their usual bigness.

Again, when such heavy rains fall in summer, (especially if the rain is attended with hail) the putrified bodies of insects, the wash of corrupted dungs and urines of beasts, and the filth of nasty dirt, are drove with such violence along the descending grounds, as oftentimes creates poisonous foams, which unavoidably are taken into the bodies of sheep and lambs, by their feeding on

grafs tainted by them, that feldom fails of bringing them under a fwift rot.

There are two forts of rots that give farmers the moft apprehenfions of their ruinous effects, one is a *Midsummer* rot, the other a *Michaemas* rot; both which I fhall endeavour to account for. As to a *Midsummer* rot, I have, in the foregoing paragraph, I hope, fatisfied my reader fo much of the caufe thereof, that I need fay the lefs of it in this. A *Midsummer* rot is generally termed a fat rot, becaufe, as it is bred and increafed chiefly by the rank fafhinefs of high grown corrupted grafs, fheep feldom want a belly-full of meat at this feafon of the year: and as they commonly have it now in great plenty, they feldom fail of thriving and fattening apace for feveral weeks together, before the abundance of moiſture, which they thus take into their bodies, can have fo much effect on them as to bring them under a fatal ſcouring and pining away: it is therefore cuſtomary, with all prudent foreſighted farmers, whoſe caſe it is of being owners of ſuch rotten ſheep, to put them into their meadows, and ſhift them from time to time, into that grafs as they think is moſt for their profit, in order to give them as much of it as poſſible they can eat, for fattening them with the greateſt expedition. And happy have many thought themſelves when, by this prudent, timely means, they
have

have got a flock of rotten sheep fat before their neighbours have had theirs, for enjoying the most forward and most profitable market, where, in course, they sell such sheep at the best prices: and because in time, markets will be so furnished and glutted with these sorts of fat rotten sheep, (that their owners are obliged to sell off at any rate to prevent their dying at home) as will greatly lessen their value. In the year 1745, when there was not a thorough general rot, I knew a farmer, who now lives near *Redburn* in *Hertfordshire*, go to *Leighton* great vale market, in *Bedfordshire*, to buy in sheep; and being there, the name of a rot among sheep had so spread, that this chiltern farmer became apprized of it, and accordingly bid a very little price for a fat flock of them, even but half a crown a-piece, and bought them for the same; though, as he told me, he believed, if the sheep had been quite sound, they would have fetched above fourteen shillings each. Woe therefore be to the ignorant man, who goes on his errand to market, unfurnished with wit enough to know, find out, and buy rotten sheep for sound ones.

In the parish of *Wing* their ploughed land is for the most part of a black, loamy, clayey nature, which obliges their farmers to plough it always one way, in the long ridge, and furrow posture, to keep it the higher and drier. Here

lived one *William Higgs*, a farmer, that kept eleven score sheep, for folding his land; now it happened, that presently after harvest a very wet season commenced, and continued warm and rainy till near *Christmas*, with some little intermissions of dry weather, which gave the grass such a spring of growth, that it proved a very rotten year among the sheep. This farmer *Higgs* fearing, provided against the worst, and therefore gave strict orders to his shepherd to keep his sheep out of all watery, sloppy places, as much as possible, and feed them on the driest ground he could: to this end the master came every now and then into the field to give his shepherd a visit, for supervising his management, and when he found he observed his orders, and went carefully on, he tipped him sixpence, by way of encouragement, and it had so good an effect, that wherever a dry, rising feeding place was in the parish, this shepherd duly observed to keep his flock there; and there are several places that gave him an opportunity to do all this, for in this parish there is hilly, common land, both of the ploughed and grazing sort, that is of a gravelly, loamy nature, though situated in the vale of *Aylesbury*, as well as a black, clayey sort; and the sheep being thus for the most part kept on high dryish ground, on a short bite of grass, they rather lost than got flesh; however they went on
grazing

grazing in this manner till near *Christmas*, and then they were every night brought home into an inclosed dry meadow, and here fed with the best of hay in cribs, which kept the sheep in tolerable heart, while Mr. *Higgs's* neighbours laughed at him, and said he would starve his sheep; but their ridicule did not make him alter his good management, for he kept on his old practice of feeding his flock on the poorest ground and shortest bite of grass, with giving them hay at night, till the spring time came on, and gave the sheep a plentiful living, when they throve and stood perfectly sound, at a time when almost all the sheep in the parish of *Wing*, besides Mr. *Higgs's*, rotted and died. So that seven farmers who lived in the parish of *Wing*, besides Mr. *Higgs*, and whose number of sheep in all were computed to be fifteen hundred, could not shew above sixty that survived the last year's wet, rotten season.

George Leatherland, of *Dagnal*, in the parish of *Edlesborough*, preserved his flock of ewes and lambs, in the year 1738, so well from the rot, that he sold them to profit. He was bred a shepherd, in *Oxfordshire*, but afterwards lived at this place, that stands on the edge of a vale, and of a chiltern country, where he kept a flock of sheep, lett out to fold farmers ploughed grounds at so much a score, for every week's folding: a

custom much practised by several in this vale of *Aylesbury*, and does many farmers a considerable kindness in helping out the folding of their own flocks, and is what I have done myself, by hiring sheep to fold for me during the summer season. Some there be that fold in this manner with couples, others with wether-sheep; when they fold with sheep and lambs, the lambs are reckoned nothing till *Lammas* day, the first of *August*, and then they tell for sheep; and for such folding, whether done by couples, or wether sheep, we give ten pence, or a shilling, per score a week. But if a farmer boards the owner of the sheep, as some do, he gives them but eight pence a score a week, and finds no meat for his sheep; for this, the sheeps master finds all the summer, by driving them about on grass commons, and on common, open, ploughed, fallow fields, and road-ways; and for making the farmer a further amends for boarding him, he lends him his hand to milk his cows in a morning, fetch him water, and do him some other odd jobs, before he goes to let his sheep out of the fold; and thus goes on during all the summer season.

And for winter management, as these sort of journeymen folding shepherds cannot fold their sheep in winter, they feed them with straw or hay, and if he is one that lives near the chiltern country,

try, he perhaps will hire a piece of turnips to subsist them, with other meat till the spring weather comes on, and gives him grass enough to fold, and go on as before.

A method practised by a certain shepherd in the vale of *Aylesbury*, by which he recovered and fatted many rotten sheep, was this. Such sheep, though reduced to great poverty in their flesh, he kept in a yard, and fed them under cover, as hogs when they are fatting commonly are; here these infected sheep had troughs before them, in which the shepherd put kiln-dried split pease, that he mixed with some pollard, and sometimes with bran, and always had a rack of fine hay by them, with a trough of water. The meat was given them at several times to prevent glutting them, and water fresh accordingly; which, with littering them with straw now and then, so well agreed with these sheep that they soon recovered, by thus drying up the watery quality of their flesh and entrails, and fatted well, for selling to the butcher, at about two months end. Some, instead of pease, will kiln-dry horse-beans, and give them split with pollard or bran. Others will give the sheep whole horse-beans, or whole pease, with bran, for feeding and fatting them in the like manner. But in case such rotten sheep are thus fed and confined under cover only every night, and turned out to graze every morning,
there

there is no occasion to give them water in a trough, for that the grafs and weeds they pick up abroad will be fufficient to moisten their bodies.

Driving a found flock of sheep from out of one dry country into another of the same kind, which, in travelling, has obliged the drover to let them lie one night in a wettish piece of ground, that has been the only cause of rotting them: this also many have experienced to their great loss, even in a chiltern or hilly country. An example of this I am an eye-witness of, because it was done in the parish of *Little Gaddefden*, where there is a common on a high hill, just before our houses, that feeds my flock in the summer-time, and several others. Now this common has two sorts of situations on it, some of it lies sloping, the rest lies flat; and all of it under a clayey surface. That part of it next to my farm, and where my sheep generally graze, lies mostly on a hanging, which is so much in their favour, that they never take the rot here, because here the waters run off before they can settle to wet the ground much, or enough to make it dangerous to sheep; while in another part of this common, where it lies flat, a farmer lost about thirty of his folding sheep in one year, out of his flock that was but fifty or sixty in all; and this merely by the rot, that they took by feeding on this flat ground: so on many other commons,
and

and inclosed grafs-grounds in chiltern countries, where sheep can feed on their declining, high, or dry lands, they will never rot, yet may do it if they feed on their lower, wet soils in very rainy seasons.

A Plaife-worm is about the bigness of the nail of a boy's little finger, with a peekish head and tail, of a flattish make, somewhat like the fish called a plaife or flounder: its tail has generally a frisking motion with it; it has no legs, but crawls by the help of its rough belly, and has a back of a yellow brownish colour. These destructive worms are of so hardy a nature, that when they are once bred, and take possession of the liver, they will continue feeding and living on it, till they quite devour it; and when the sheep is dead, these insects die not with it, but will live afterwards, while they have the same sort of subsistence to feed on; such sheep will eat more meat, and fat sooner than a sound sheep, and feed they do with a greater appetite than a sound sheep does, which causes them to fat apace, and become fit for an early market, before they sink of their flesh; and so possessed are many graziers of this opinion, that a rotten sheep will fat sooner than a sound sheep, that they make no doubt of it, where they have meat enough; for they have found by many trials, that at the beginning of a rot, no sheep feeds nor fats faster than
a rotten

a rotten sheep, notwithstanding the plaife-worms multiply as the rot increases; this makes the common saying true, that no sheep thrives faster than rotten sheep do for a time, and that no sheep decays sooner than a rotten sheep, after it begins to sink in its flesh.

Rotten sheep have knit and recovered, by eating ivy leaves, and by change of pasture. These ivy leaves are to be had at all times of the year, even when the deepest snows lie on the ground; and this in both chiltern and vale countries, by reason ivy is an evergreen, that twisks and climbs about the bodies of trees, to a great height; and grows also close to walls, pales, and creeps along the bottom of hedges, and about them, with its substantial leaves, that have in them some excellent qualities, being of a hot and dry nature; shepherds therefore have a great value for them, as they are very serviceable to sheep on several accounts. A ewe sheep that had a great cough, and was deemed a rotten one, recovered, by having some of these ivy leaves given it to feed on, only now and then; and thereby became so well, as to have several lambs afterwards. I knew also a poor man, that bought a ewe sheep in the vale of *Aylesbury*, for a very little money, as a rotten one, but by keeping it on a dry, hilly ground, it knit and had several lambs. No rotten sheep can stand the feed of
turnips,

turnips, so as to fat with them; not but that they may go on for a fortnight, or three weeks well, and then fail; and for knowing this, in the beginning, it is to be discovered by their falling off their stomach, moping, and drooping about, and then beginning to scour.

The Red Water.

The red-water is an internal disease that is hardly to be accounted for. Ask the shepherds, what breeds it? most of them will answer, it is the flashiness of the grass; or, that the sheep has caught cold: others, that they do not know; and the same among the sheep-jobbers, they generally plead they do not know, but confess it is a deadly disease that kills rams, ewes, wethers, and lambs, in a little time: for that these are all subject to it, even ewes while their lambs suck on them, and lambs while they suck on ewes. Nor are the dry, hilly countries less subject to cause the red-water in these animals, than vales, but rather more. In vales few farmers find it their interest to sow their rich, marly, ridge-lands, with turnip, or rape-feed; and as their sheep are not here fed with turnips nor rapes, they are not liable to suffer by these watery, succulent plants, but only by flashy grass, and some other incidents; whereas in chiltern countries, and in some sandy, vale countries, turnips are their chief winter food, and in some parts
rapes,

rapes, therefore sheep and lambs are more subject to the breed of the red-water in the latter, than in the former. When the red-water is in such a quantity as to get the ascendant of the sheep's body, it is frequently seen to make the sheep drivell and discharge a water from its mouth, caused by the excessive quantity and overflowing of the red-water in the belly of the sheep; which water has been catched in a white cup; and though it seems whitish as it falls from the sheep's mouth, yet if it stands a little while in the cup, it will have a reddish cast in it. The red-water will breed in a well-fed sheep, as well as in a lean poor sheep; in a sheep that feeds in vale ground, as well as those that feed in chiltern grounds. No field-plant is fuller of sap, or watery juice, than turnips or cole; nor no plants breed the red-water in sheep or lambs so soon, and so much as these do.

But what I would here chiefly remark is, that this farmer, as well as most or all others of the suckling sort, suffered much loss by the foot-rot malady. It is true, that by driving the ewes, twice a day, from the field to the house, for suckling house-lambs in winter-time especially, their feet become sore, and if neglected curing in time, they will rot off, create them much pain, lessen their appetite, milk, and flesh, and infect both their lambs and other

sheep, to the farmer's great loss. But then, this is not the sole cause of this damage; therefore I am here led to observe, that, as those suckling farmers buy all, or most of their ewes out of the west, they should consider, that most of this country lies in downs, where their sheep feed on fine, dry, grazing grounds, free of drift, to hurt their feet; and that, as their ewes are drove up in flocks, to be sold in *Middlesex* and *Hertfordshire*, some with lambs by their side, and others in lamb, their tender feet must suffer a soreness, in some degree, by such their travelling; and although such soreness may not as yet be called a foot-rot, yet an imprudent suckling farmer, not regarding this, he drives them, in a little time after lambing, to and from the fold; and as the dams, or own mothers, lie all night with their lambs confined in a house, it is a rarity to find one of these farmers, but what will let the dung, made by these ewes and lambs, remain in the place a quarter of a year together, contenting themselves with only covering the same with fresh straw every day; so that here is almost a constant hot dunghil for the sheep to tread and lie on, which must certainly heat their feet, make them tender, and expeditiously breed and increase the foot-rot malady.—Whereas, if the sheep-room and lamb-pens were cleaned out
once

once every week, and duly littered with wheat-straw, morning and evening, the sheep and lambs would not be so subject to take the foot-rot as most of them now are; but if they should have it, the malady, by this means, would be much easier and sooner cured; for, it is for want of this cleanliness, and cool lying withal, that their lambs lose their appetite, scour, and, instead of fattening, fall away: Then the farmer must eat it himself, or sell it to his neighbours, which is next to giving it away, as has been the case with many of the negligent sort; and no wonder it is so, as a lamb has four hot bellyfuls of milk every day, and lies penned in a close place on hot dung, perhaps, near knee-deep, seven or eight weeks together. But some will say, if dung and litter is not deep, the lamb will lick the posts and brick-work, and suffer this way; it is true they will, but a right lamb-pen should be all boarded on every side to prevent it. Others object and say, without a deep pen dunghill, they must use much straw, and not make a valuable dung; but this is so frivolous, as needs no answer. However, I shall continue this subject as follows.

As in *Hertfordshire* and *Middlesex*, the suckling of house-lambs is carried on more (I verily believe) than in all *England* besides, for furnishing the city of *London* with the greatest plenty
of

of house-lambs flesh, as a most delicious, wholesome meat, I think I cannot make my remarks on this destructive malady better, than writing on its effects, as they bring these suckling farmers under very great losses.

The Causes of the Foot-rot Malady in Suckling Ewes.

It is well known, that the roads of these two counties are frequently mended with gravel and small stones; both which are made use of in very large quantities, because the heaviest land-carriages are constantly drawn through them laden with wheat-meal, wood, hay, &c. to London, and in bringing back coals, ashes, foot, rags, dung, and other luggage, which render these roads in wet weather very gravelly and sloppy. Now there are many suckling farmers that live on, or near the edge of these roads, that are obliged to drive their suckling ewes twice a day, to and from their fields for suckling their house-lambs, and this for a quarter or half a mile together, each time, which, in winter-time especially, so cuts the hoofs of these travelling ewes, that I know a plough-farmer, who rents an hundred a year, and keeps about seven-score suckling ewes, has commonly five, six, or eight of them to dress every second night, for curing their sore feet throughout the

cold wet season; and this is the more increased, as the soil of his inclosed arable fields are of the gravelly sort, sown with clover and trefoil grass, or with turnips,——which more or less subject these suckling ewes to suffer by the foot-rot. Yet this is not altogether the case of every suckling farmer, for there are many others that rent only meadow or pasture grounds in *Middlesex*, and carry on the suckling of house-lambs but part of the year; here their suckling ewes do not entirely acquire the foot-rot by travelling through roads or lanes, but partly by their flashy, wet grass, and ground, in winter, and, at other times, by the great heat, and dryness of the land; for, in *Middlesex*, they dress it with so much *London* dung and ashes, that the heat of it contributes very much towards the breeding and continuing of this hurt; insomuch that these suckling meadow-farmers, are rather more liable to suffer by the foot-rot, than the suckling plough-farmer, because when once their ewes have taken the foot-rot in a great degree, the pus or matter issuing from their wounded feet, falling on their grass ground that is never ploughed, it remains, and so taints it, that it becomes infected; and the infection increases, as the greater number of ewes come under it; whereas such infected ground does not so soon fall to the

the plough-farmers share, because their land is frequently turned up by the plough. Nor does the foot-rot malady affect the plough-farmers suckling ewes in summer as it does in winter; for in summer they are seldom troubled with it, because the gravels, in dry weather, are not near so cutting as in wet.

What consequence it is of for all suckling farmers to endeavour the prevention of this pernicious, contagious distemper, the foot-rot, may appear from the great losses that arise from it; for they well know (the *Middlesex* farmer especially) that most of their meadows are so much infected by this sheep-malady, that they are seldom or never free from the taint of it; and that it is for this reason, that few of their suckling ewes are ever clear of it, in a less or greater degree; the pain and anguish whereof takes them much off their appetite, lessens their milk, and keeps them poor in flesh; so that two or three ewes, thus afflicted, give no more milk than one full-milched ewe that is in perfect health; which must be a considerable loss to a suckling farmer, who has all, or most of his rent to make by suckling house-lambs: Yet the loss does not end here; for when suckling ewes are much troubled with the foot-rot, the pain and anguish of it prevents their taking ram in due time, wears them out

sooner than ordinary, and sometimes renders them unfit for the suckling service; and if the malady gets the better of the remedy, the foot rots off; or if it does not, the ewes, perhaps, must be either fatted at home, or sold for the same purpose.

C H A P. II.

O F C O W S.

S E C T. I.

Sundry articles of Management.

IT is a fault to keep a cow too well before she calves, for then she is apt to be so firm of milk, as to endanger her life; a neighbour of mine had one in this manner, that fell and died. Another fleshy cow calved well, but, upon the owner's giving her half a bushel of grains too soon, itocked her with so much milk, that she fell and died. This also will be the effect of cold water, if given to a cow that has been kept before in the house, the first time after calving; therefore we make it blood-warm, twice or thrice, and put a handful of bran in each pail. Now, to prevent the like misfortune, give her dry meat, a little at a time, for the first two days after calving, to check the milk, and

and hinder danger. But when a cow is poor, or in middling order, there is no occasion for this sort of management.

The bag must be got away as soon as can be, to be washed and scoured with salt on both sides, to make it sweet and white. Then, after the curd is cleaned and washed, it must be put in again to the bag, with a handful or two of salt, and skewered up to lie in an earthen pot, close covered in a dry place. When the rennet is to be used, put some salt into a quart of water, till it bears an egg, and boil it; when cold, put it into the bag, and let all lie in the pot again. This rennet will keep a month good, and, to about sixteen gallons of milk, use two spoonfuls of this liquor.

To fat Cows.

The beginning of *August* we dry those cows we design to fat. There are two ways made use of for this purpose at *Gaddefden*; one is, to send such dried cows about *Lammas* into *Aylesbury* vale at one shilling or fifteen pence a week, where they graze in their rich meadow-grounds till *Allballontide*, or longer; and, if they are not fat for the butcher by that time, we stall them at home, and feed them at rack and manger, as I am going to shew in another case. Those farmers who have a quantity of fine

upland meadow-ground as well as ploughed ground, and where there is enough aftermeath and other provision, they feed such dry cows altogether at home, as long as their natural or artificial grasses last; and then take them into an house, and feed them only with turnips and hay; or, with barley-meal mixed with chaff and oats, and good hay besides; or, with barley just broke, oats, and *French* wheat mixed together, and good hay; or, with bran and flit beans, and good hay. And this they do till *Christmas*, or till *Lady-day*, and then sell them to the butcher, sometimes to a considerable profit.

S E C T. II.

Weaning Calves.

I Buy my suckling calves at *Leighton*, for five or six shillings apiece, about a week old, to wean; for, the younger the better, because they will take the finger the freer: However, at first they must be suckled a little, and by degrees used to a flat tub, or bowl, wherein some milk has been put, and the head of the calf forced to it, with a finger in its mouth; and, when it has been used a day or two to it, nail a bit of leather in the middle of the tub, to stand upright, in imitation of a dug; which in a little time it will take

take and nibble, and suck itself. Then, in a week or two after, you may mix water with the milk, letting it have good grazing all the while; and in about six weeks, or two months, it will be weaned, and live altogether on grass, with little or no water, unless it be a very hot dry summer, and short grass. In the winter following, it will be good husbandry to let it have hay in hard weather; because good keeping the first year is the way to have them a year forwarder than those kept on straw. So a calf, weaned in *April*, will wrinkle on the horn a year sooner than one weaned late in summer, and take bull a year sooner.

The Welch Way of fattening and weaning Calves.

They wean the calf at a week old, in order to enjoy as much butter and cheese as they possibly can; and to make the most of the calf, either to fatten for the butcher, or to wean it. As soon, therefore, as it is taken from the cow, they stir into a parcel of skimmed milk two or three handfuls of bean-flour, or, for change, oatmeal; which, by the help of a finger in the calf's mouth, it will greedily suck and drink it in; by which it will receive extraordinary nourishment, and thrive apace; And thus they save the common expence of

suckling them with the cow. But to be more particular : When they first wean it, they suckle it with the finger four or five times a day, and lessen by degrees, till it comes to twice a day, and the calf drinks of its own accord ; and this they do for six weeks, or two months : Then they sell it for veal, or turn it to grass, giving it now and then a little skimmed milk, or whey, to drink.

Another Way.

The calf lies on a stage built high for the urine to run off; and each calf is fastened to a post by a collar and swivel, allowing them only a small length of cord or chain. Here they fat them, by putting a little wad of hay into milk as big as one's thumb ; which the calf will suck himself, else it must be put into his mouth ; and by this means he will fat for the butcher : Likewise, at two months end, he is turned out to grass for altogether. My next neighbour weaned two calves at a time, at a week old each, and at three weeks end he turned them both out to grass. One had skimmed milk allowed it every day, and thrived apace ; the other at the same time refused it, and fed altogether on grass, but became very lean ; but, when the former came to be kept only on grass, he lost flesh, as much as the other

other then gained it; however, they both made good cows.

In *Essex*, I observed, they have very compact cow and calf-houses: For the first, they make them stand tail to tail, with an interpace of about four feet, for the men to pass and repass, and, at their heads, they have square pieces of timber erected, with a place to fasten their heads in, by a catch of wood, that slips in at top. On one side of each standing for three or four cows, there is a square place for three or more loose calves to lie on wheat straw, laid on boards, which have several holes in them, to discharge their urine into a large hollow place underneath them. In this same square place is a rack, with large chalk-stones for them to lick and eat at pleasure. Here also is a trough set before the calves, with barley meat, mixed with a little salt, for their improvement. Others mix powdered chalk, wheat flour, and oatmeal. Others give white oats, or yellow slit pease. But, if milk happen to be scarce, to make it go the farther, cramming was invented, and may be managed with a great deal of success, if rightly ordered. To do which, mix fine wheat flour, powdered chalk, milk, and the best anniseed-water, which is far better than gin, or common spirits. Others will mix *Scotch* oatmeal, sifted fine, with milk only, and give it in small balls four
at

at a time, dipped in milk, an hour before suckling. Some, again, will give these an hour after suckling, with a few spoonfuls of milk after each cram or ball.

If the calf is permitted to lick the ground, wall, or boards about him, it will have the same effect. The *Essex* men never cram till three or four weeks old, and seldom that but in winter, when milk is scarce; some of whom are so nice to have a calf look white, that they bleed him in the last week twice: but if his barbs, teeth, gums, and eyes appear white enough, they bleed him only once in that time, and that is commonly the day before they have the calf to *Smithfield* market. But, with these artifices to save milk and fatten (for it is the opinion of many, that it makes the flesh worse, than if all milk is given them) the calves must be sure to lie dry, as I have observed, or on a foundation of faggots, and then duly supplied, twice a day, with wheat-straw, else they will be lousy and suffer.

S E C T. III.

Of Soiling them.

SOME will mow grasses daily in the summer, and give them the cows under cover, to make them lose their hoving and rank quality in a great degree, prevent the cows
trampling

trampling them with their feet, and keep the cattle from the fatigue of flies, and the scorching heats of the sun, as I every summer do, for carrying on the business of suckling calves; and this we are the rather encouraged to do on another principal account, which is to preserve their feet sound; for, if the cows suffer by long drifts and sore feet, they will give less milk, though they feed in the best of pasture.

This way I follow myself most part of the summer, by contriving to have a near field sowed with clover seed, for then we can mow it daily, and bring it home with more ease; a distant field, therefore, is not proper for this undertaking: but, when we enjoy clover out of home closes, by giving it to cows in racks under cover, it prevents the common danger of hoving, spoiling great quantities of grass by the tread of their feet and their dung; the torment of flies, and the too great heat of the sun; the fatigue of driving them to the field, and the risque of the cows breaking into neighbours ground. Instead of which disasters, that are incident to cows grazing on clover in the field, we obtain great quantities of dung at home, and employ our offal straw to the best advantage, large quantities of milk, and the fattening of beasts at the same time, in the quickest manner. Hogs also will feed on the orts of clover, as it falls from the

cows racks, and go a considerable way in the subsistence of store-swine. One acre of clover, fed this way, is thought to go as far as some six of natural grass fed in the common way, and as far again, at least, as clover fed with beasts in the field.

S E C T. IV.

Of the Product of Cows.

Of the Profit and Loss of Milch-Cows.

THIS article cannot be calculated to a certainty, because there is much disproportion in the difference of cows, their feed, and the value of their milk. At *London*, undoubtedly, they have the best market in *England* for their calves, their milk, and their fat cows. Their meadow-land is about fifty shillings an acre per annum. At *Gaddesden* thirty, and near our country towns forty. About *London*, with their early and late rank grass, hay, turnips, and grains, their cows are kept in the highest degree of milk, and, at the same time, are feeding for the butcher; by which they sell them out-right for a top price, or exchange them for new-milch lean ones, at little or no loss; but the first is their common way: besides which, they buy their grains at a shilling or sixteen-pence a quarter, when we, and in most country towns, pay three-pence

pence a bushel for them. This is a main article of profit, as it is a feed which produces the greatest quantity of milk, though of the thinnest and most watery nature, far short in goodness to that caused by our upland meadow-grass, and hay alone; and yet they sell it for more than a penny a quart, in a measure that is lesser than a wine quart, while we at *Gaddeſden*, twenty-seven miles from *London*; sell three wine pints for a penny; and at our country towns, they sell a *Winchester* quart of milk, all the year, for a penny: so that the *London* cow-keeper has a considerable advantage of the countryman, in the feed, in the price of milk, and in the sale of cows and calves.

In the vale of *Aylesbury*, five pounds a year is reckoned the profit of one cow, supposing her to yield about four hundred gallons in that time, either sold by the quart, or made into butter or cheese, or in suckling calves. A certain author says, if we make butter only, about two hundred weight may be expected from a middling cow a year, besides a hundred weight of skimmed-milk cheese, and whey for hogs. Or that, if we make raw-milk cheese, we cannot compute it at more than two hundred and fifty pounds weight in a year, and about a hundred weight of whey-butter, and whey for swine.

As to the suckling of calves, I have to write, that there are several circumstances in favour of this undertaking; as when a person lives in a country where they are plenty; or has sons, but no daughters for dairy-maids, or where grains can be had cheap, that will produce a thin bluish milk, which is the most natural for suckling calves. I say, then, I could never find that a cow would suckle and fatten above three or four at most, besides her own calf, in one year, and then the amount of gain will be but about five pounds; for a cow is a great devourer of hay in winter, and can eat easily one hundred and a half weight of it, if not two hundred, in one week, and even then will not return so much milk, with altogether this dry food, as she will with half that quantity, and her fill of grains, turnips, or other wet meat besides.

This is a farmer's account, who keeps the same cows years together, that vastly differs from that calculated by a person for the *London* cow-keeper, who, in a book, says, That by exchanging cows, when they fail in their milk, for others newly calved, he may have three gallons of milk a day, *Winchester* measure, all the year, which, at a penny a quart, amounts to eighteen pounds five shillings a year per cow; and this without any loss by the exchange, because a stale milched cow, being near beef, is on a par with a new-milched

milched lean one and a calf by her side. But the country farmer, who has nothing but grass, hay, and straw all the year, must come to another reckoning, and calculate nearer the *Irish* account, which computes a cow to yield three gallons of milk a day for the first ninety days; for ninety days more, one gallon; and for ninety more, scarce one quarter of a gallon, and for ninety more she is dry.

It is true, that our cows are something bigger than the *Irish* sort; but it is plain, that the farmer cannot go to the same market with the *London* cow-keeper, and get a new milch-cow for a stale one, unless he carries twenty or forty shillings in his pocket to give in exchange, which will cause such a discount, as will not make it worth his while to go this way to work. Nor will suckling of calves answer so well as a dairy, but on these following accounts: if your keeping is artificial grasses, then suckling is better than a dairy, because both butter and cheese from such feed is commonly rank, and, at best, meets with a lower market than ordinary; but, when such grasses are employed in suckling of calves, the ill taste of the milk is of no importance, for, in the veal, it is not perceived. Likewise, if you have a gross, marshy, or rushy natural grass, suckling, for the same reasons, is to be preferred.

So,

So, if you live in a place, where there is nothing but thick or troubled pond, or ditch waters, a dairy here will not answer so well as suckling, but is best carried on by the feed of upland, or other meadow-grass, and where clear water is in great plenty; for, as this is the best of food for cows, it ought to be put to the best use, and that is in a dairy.

The Gaddefden Way of managing Gbest or Barren Cows.

Here we for the most part carry on the suckling business, because we have good land for clover, and other artificial grasses, which generally yields such burthens of them, that one acre will produce as much milk (though coarser) than two of natural grass; but there is this inconvenience attends suckling: by the vehement lugging and drawing of the milk by large strong calves, the cows are not so prone to take bull, as those are in the dairy service; and when they happen to miss their season, there are two times in the year that we fat this sort, viz. About *May-day* and in *August* we turn them into the vale from our chiltern country to fat them, and in about twenty weeks, in some years, they will get fat, for which we pay one shilling or sixteen pence a week. If in *May*, they come out for killing in harvest; if in *August*, about *Christmas*.

For,

For, at these two seasons, beef commonly sells best to the butcher, which may put five or six pounds into the farmer's pocket; and thus enable him to buy in a milch beast, with a calf by her side, for four pounds, or four pounds and ten shillings. The overplus is to defray the charge of her fattening. And thus he makes a dry cow buy a wet one.

In an indifferent year, a good cow will yield, in the height of the season, sixteen or eighteen quarts a day; and if the weather be dripping, she will yield more, and then butter is made longer.

Twenty-two gallons; or 176 pounds of cream, yield about seventy pounds of butter.

A dairy-man that keeps sixty cows in *Denny*, a near town, has a barrel-churn that holds an hoghead.

BUTTER.

Of Churning Butter.

The degree of heat cream is in, when put into the churn, is a main matter; therefore most first scald the churn in winter, and then directly put the cream into it, to stand about seven minutes; and when that is out, they put in cold water, to stand a quarter of an hour. It is generally observed, that, unless it be an hour before the butter comes, the butter-milk will be thick, and the goodness not out; but by chanc

some have had it good by churning only half an hour. Churning too fast gives the cream the less opportunity of working. A man, at *Crafton* in *Bucks*, was thirteen hours churning in a barrel churn, before the butter came, and yet did it near the fire. Two or three spoons of pewter, put into a barrel churn, make the butter come the sooner. Butter, in summer, ought to be churned very early in the morning, and when it is come, let lie an hour in cold water before it is made up; for too much heat makes it rank and bitter, and though you salt such butter over again, it will not mend it. Put a pewter spoon into a pitcher, and, if you shake it enough among the cream, butter will come. Some land causes butter to come late, and so do stale milched cows.

The best Way of making salt Butter fresh to great Profit.

In the cheap time of the year, and when it can be properly done, pot your butter, and keep it till fresh, you think, is at the dearest; then cut it out in thin slices, and put some into a barrel churn, just at the time when the cream begins to turn for butter; for, if you put it in before, the butter will not come near so well, and when all is mixed and come, wash it in fair water.

When

When Butter is best made.

April and *September* are reckoned the worst months to make butter in, because then the season is between grass and hay. No good butter, it is said, can be made after the leaf is off. If butter is made of clover or other artificial grass, it is apt to be rowy or straky; yet with good management this may be prevented.

To make Butter to pot or barrel.

Stir your milk in a pail or tub while it is warm from the cow, and do it several times in half an hour; then put it into your leaden or wooden stands or pans. Keep your cream in an earthen glazed pot, and, if you do not churn quickly, shift it into others every twelve hours to keep it sweet. As your butter is churned, wash it in two or three waters, and salt it to your conveniency. Beat all the butter-milk clean out of it, for on this very much depends its keeping sweet, but never wash it after salting. If it is to be potted, keep it all night in what in some places is called a wedge, and beat it next morning again. Let your layers in the barrel pot be two inches thick at least, and strew a little salt between every one, and so on till the vessel is full. Twelve cows generally make a firkin and a half a week in summer, and one in winter. The butter, that is made in the forward part of the summer, is not

so good for potting as the latter sort. Where cows feed only on the grass baulks of ploughed grounds, and in stubbles afterwards, they do not begin to pot butter till the corn is off, and leave off when the ash and other leaves drop.

Dairy Utensils.

That this end and purpose may be effectually answered, there must be such a number of proper wooden, round, shallow tubs, or kivers, or leaden stands, or better some of both, and other utensils, as are sufficient to carry on a dairy, in a clean sweet manner. To twelve cows under milk, there should be a dozen of these kivers bought in; the largest cost five shillings, and the smallest three shillings each, all made of oak, with broad ash hoops, and three leaden shallow stands, made of milled lead, fastened in thin deal frames, with a cork hole in the middle of each, for letting out the milk, and leaving the cream behind. One of these last about five feet long, and three feet wide, at *Leighton-Buzzard* (where they were first invented) costs twenty shillings. Others of three feet long and two broad, in proportion. All which round wooden kivers, and leaden square stands, are perfectly necessary for this undertaking; some to stand drying, while others are under milk. Now both the kivers, and leads, must be always cleaned thoroughly well, after milk has once stood in them; but in a different manner.

manner. For the kiver, you must use only a hard brush, with boiling water, and, when rinsed, set to dry; but the smaller kiver is commonly boiled in a copper, and so should the bigger one, if there is room enough for them. For the leads, you must use a wisp of straw or hay, wood-ashes, or bean-straw ashes, and boiling water, with which scrub or rub them well; others make use of sand for the leads, instead of ashes. The reason of such different management is, because, if you were to use ashes, or sand, to rub and clean the kivers with it, in time it would raise a roughness in their woods, as to cause them to breed and lodge a sudden foulness or fur in them, that would, again, soon bring on a sourness in the milk and cream. But, as lead has a smoother and harder body than wood, it is less in the power of sand, or wood-ashes, to bring it under this damage.

Next must be had twelve earthen glazed cream-pots, which, after each is used, must be boiled in the copper.

To these must be added four large milking-pails, that are commonly made with oaken bottoms, and ashen sides, that they may the easier be scoured white; and, for this reason, some will have their kivers made after the same manner. These pails must be rinsed out every night, with only cold water, and, after next morning's

milk is brought in, they must be scrubbed with ashes, or sand, and hot water, and then boiled about two minutes in the copper.

Besides these, there must be a cooling tub, that will hold about thirty gallons. Into this, all the milk, as it comes directly from the cows, must be strained and stirred now and then. The fuller it is, the oftener and longer it should be stirred; sometimes half an hour, or more, is little enough to cool the milk, before it is put into the kivers and leads.

Lastly, the oaken barrel churn, or mill, must be in a readiness, that is about two feet diameter at each head, and about three feet in length, has two winches, or iron handles, for a couple of persons to turn it at a time on a wooden stand, that costs about twenty-seven shillings, iron-work included. Such a vessel will churn four dozen of butter at a time, and is cleaned each time, by putting into it one pail of warm water as soon as the butter is taken out, which serves to rince it; and then two pailfuls of boiling water must presently follow, to stand a quarter of an hour in it, before it is turned out.

To make a fresh Butter in the hottest Weather for a London Market, and yet churn but once a Week.

In many places, those higlers or carriers who live thirty or more miles from *London*, can go thither

ther but once a week conveniently, and then some dairy-men are obliged to churn for them only once a week, others twice in that time. I mean, where there is a contract between a particular dairy-man and a higler, as is a common custom in *Aylesbury* vale, for furnishing him with butter all the year, at a winter and summer price. To do this, it requires a great deal of care, and various managements, of which I shall here give you a precise account, viz. Now being completely furnished with necessary utensils, and the morning milk set, the first skimming, in summer time, is to be made at night, a second next morning, a third the night following, and, if the weather is not too hot, a fourth the morning after. The first three skimmings, from one and the same tub or lead of milk, are to be put into one of the earthen cream-pots, which, every morning following, is to be shifted into a fresh pot; but the last, or fourth skimming, is to be put into a pot by itself, to be churned alone, for making an underling-butter (as the dairy-men call it) worth a penny a pound less than the prime sort, made with all the first three skimmings. If the milk stands only three skimmings in all, the two first must be for the best, and the last for the underling-butter. Leads, in summer, yield one skimming more than kivers; but, in winter, the warmer wooden kiver yields one skimming more

than a lead. In summer time, they strain in as much cold spring water, as will half fill the churn, to stand all night, till the cream is strained in its room: but in winter, they put in as much warm water, to stand a quarter of an hour, when it is to be emptied, and the cream immediately put into the churn after it. After the cream is strained into the churn, since the pots, in summer, with half a pint of cold water, in winter with as much hot; or you may do the same with skimmed or new milk, and put all the wastings into the churn, with the cream: (others will do none of this) then stop up, and churn away leisurely, and faster by degrees, giving it vent at the peg-hole, as the swell comes on. Some, again, observe to churn brisk a little at first, and slower afterwards; but this is generally regarded: that, in summer time, the slower you turn, the sooner the butter comes, because, if you then turn too fast, it will heat the cream too much, and make the butter white, soft, bitter, and be the longer coming. On the right management of this depends a great deal of the art of a dairy-man; for some cream has been churned sixteen hours by a fire-side, and could not get butter; but they were forced to give all to the hogs at last. If after you have churned some time, and then be forced to put in hot water, or hot milk, to make it come the sooner, the butter will

will be a little bitter ; and if you put milk with the cream into that churn, it will be the longer coming : therefore many skim off only the neat cream : the underling-butter, also, seldom or never comes so soon as that made with better cream. A clever dairy-maid, to make her butter come stiff and good, when she thought her butter about half come, would put a quart or two of cold water into her churn, in summer : But, in winter, she put in as much warm water, as believing it gives the butter a better colour, than if so much milk had been put in, which is apt to whiten it the more. When the butter is come, turn very slow, that it may gather the better. Butter should be churned by two or three of the clock in a summer-morning, and then thrown into cold water, for an hour before it is made up. But one of our acuteſt dairy-men uſed to churn in the night-time, during the hot ſeaſon, and, as ſoon as he could, would put the butter into a water-bucket, which he let down into the well for a little time, till it was very cold, and by this method had the beſt of butter.

Churning twice a Week.

When you have got your half week's cream, churn it into butter, beat it, ſalt it well, and put it into a glazed earthen pot. Then churn the other half week's cream, thus : Cut the
laſt

last salted butter into thin slices, and put this, and the cream, into a barrel-churn, and churn all together; by so doing, the cream will gather about the slices, and all will become a body of excellent fresh butter, without any further addition of salt; which beat well, that the butter-milk, or whey, may be clean got out, and make it up between two large trenchers, whereof one should have a thumb-hole in it.

But in case you can sell your butter twice a week, which is certainly the surest and best way, then churn twice a week, but don't mix salt with your butter, unless it be first beaten, and made very fine; and even then, it is not so good a way as to use brine instead of it. Make a brine strong enough to bear an egg, strain it through a fine cloth, to take out all blacks and fullage, and work it well in a wooden kiver, into a flat shape. Then, in this new churned butter, make hollow impressions with your knuckles, on which pour your brine, and work or knead it in several times, till, by your taste, you find it salt enough. The excellency of using brine, instead of salt, is obvious on this account: When salt is directly incorporated with the butter, it is apt to appear in rows, and be felt gritty in the mouth when eaten alone with bread, and consequently does not affect
the

the butter in all its parts alike, to the hazard of its keeping good but a little while. On the contrary, the brine, being of a watery body, is easily impregnated into all the parts of the butter alike, to its longer preservation, and pleasanter taste.

Butter made with boiled Cream once a Week.

A certain dairy-woman, in the vale of *Aylesbury*, as she was obliged to churn but once a week, made it her constant practice, all the summer-season, to put her mornings and night skimmings of her cream in a kittle, and, when it grew warm over the fire, she would stir it, and continued so doing, till it boiled a wallop or two; then she put it into an earthen pot, and kept stirring it till it was almost cold, left it clotted: To this she put her other raw cream to preserve all sweet, and, at the same time, stirred in a handful of salt. In winter she would likewise put some salt into her first raw cream, and it secured all the rest of the raw cream that was mixed with it till she churned, without boiling any, till the hot weather came on.

Whey Butter.

Where butter is only made, the last, or the two last skimmed creams (as I said before) saved by itself, makes it; but, where they make
butter

butter and cheese, it is often made with the last, third, or fourth skimmed cream, and an addition of whey-cream, and still is called underling butter, in *Aylesbury* vale. But, when butter is wholly made with whey-cream, it is then justly named whey-butter; however, where there is no fraud used, they are both sold a penny, or two-pence a pound cheaper than the prime sort; which may serve as an information to all, particularly to those who buy large quantities of fresh butter, lest they lay out their good money for a bad sort.

C H E E S E.

Cheese from Clover-Grass.

To make this cheese has puzzled many, so that they could never attain to do it well, and therefore laid it aside; because clover being a rank grass, and the more so when got oldish, it will cause the cheese to hove, be full of eyes, taste strong, and soon rot. But could there be a way found out to make good cheese from such bad grass, it would be of great profit, by reason clover will maintain double the number of cows that natural grass can; in order to which I communicate the following experienced method, that I never knew but one man's wife do in our parts of *Hertfordshire*: She would put the curd in the press for four hours, at the
end

end of which she would take it out, break it small with her hands, and throw it into scalding (not boiling) whey for a quarter of an hour; then take it out, and work it well and put it into the press again as usual. This is called *Scalded Cheese*, for, by putting it into the whey, it takes off the rankness of the curd, that would otherwise make the cheese hove. If it afterwards cracks, they fill the vacant places up with butter, and it is cured. Sometimes they work two cheese curds into one, and make a thick cheese this way, almost as thick as the *Cheeshire* sort. This woman's way was commonly to mix one meal of new milk with two of skim for making her cheese. And so perfect was this woman skilled in the dairy business, that her husband assured me, she would make as good butter and cheese from clover-grass as need to be eat; which with many other good services that she performed, superior to her neighbours, in the farming way, made her husband greatly lament her loss, for he could never after, in many years, get a servant maid that could manage the making of butter and cheese as well as his wife.

I know a vale woman whose cellar is but three feet deep from the common surface, and who churns but once a week, summer and winter, by means of her boiling cream just a wallop

wallop or two the second or third day. Afterwards she preserves all sweet by adding raw cream to boiled cream, and shifting it daily into fresh glazed earthen pots: So that the first boiled cream, and shifting, save the rest from sowering.

For whey butter she boils the whey, and skims off a cream as it rises. When cold it makes a stiffer butter, than whey cream got in the old way.

Setting milk hard makes the butter bitter. Setting hard is, letting the milk stand too long without skimming, whereby the cream gets a very thick head. Though you boil the cream; yet if you set the milk hard, the butter will be rank.

Cheshire Cheese.

Some make them with all new milk, others with half skimmed and half new, and then it is a two-meal cheese. When the milk is as warm made, as when it comes from the cow, they put three or four spoonfuls of strong rennet into it, to make cheese of a hundred weight; and, when one is made of this bigness, it is commonly done with all new milk: The more rennet, the shorter and bitterer it will eat. In about half an hour's time, the curd will come in the tub; then squeeze it down

with the skimming-dish, take out the whey, and break all the curd as fine as possible with your hands. A cheese, about fifty pounds weight, must have half a pound of salt, worked into it; which when mixed truly well, put all into a wet cloth, and squeeze out the whey clean; then lay the same into the wooden mould, or vat, and screw it in a cheese-press for four hours; then take it out, salt the outside, turn, and put it into a fresh wet cloth, and press it four hours more. When this is done, take it out and lay the cheese in a tub of strong brine, to be covered all over in it, and turn it once a day in the liquor, for six days together: If it is bigger than one of fifty pounds weight, let it lie eight or nine days. After this it must be taken out, and laid on green rushes, two or three weeks together, where it must be turned every day, and rubbed with a hair cloth. Next is the laying of it on a floor, or better on a shelf, for its being turned and rubbed once or twice a week, till it is got hard; and then it should be rubbed all over with half a pound of butter, to give it a yellow colour, and preserve it sound.

About *Nantwich*, in *Cheshire*, they turn out their cows about mid-*April* to graze, and then the weeds, as the chives, horse-mints, and others,
are

are higher than the grass, which so affect the milk, as to cause the first cheeses to be horridly rank; some to hove, so as to run into a ball presently after they are out of the press, and be full of holes. To prevent this in some degree, they boil part of the milk, and put it to the rest. They never make cheese here, till they have milked the fifth meal after the cow has calved. The bigger the cheese, the better it is. In some great dairies they will make two cheeses in one day, of a hundred pounds weight each, and continue making their best factor-cheese till *Michaelmas*, and then a poorer sort for the country people; after this, a butter to pot for their own use, till the cows go dry.

A gentleman in *Bedfordshire*, being a native of *Cheshire*, and living in a very rich estate of his own, in *Bedfordshire*, was very desirous to have *Cheshire* cheese made there, as believing his grass was good enough for the purpose: Accordingly, he procured several *Cheshire* servants, who, though they had all the conveniences that were necessary allowed them, yet could not keep the cheese from hoving and rotting, for they could not make it stand.

Cheese made with Sheep's Milk in Denbighshire.

Five or six ewes will give as much milk as a good cow. When two meals are got, heat them, and put them to a third meal, as soon as it is taken from the sheep, so that all must be in such a degree of heat, as when milked from the beasts. Then put your rennet in, and let it all stand in a tub, covered with a cloth. Here will come more curd than from cow's milk; take it out, and break it fine with your hand, put it into a wet cloth, and then into a press for six hours. After this take it out, shift the cloth, salt the outside, and press it again for six hours more, turning the cheese topsy-turvy; then lay it on rushes on a cool floor a fortnight, turning it every day, then put it on shelves, and rub often. This sort of cheese will be fit to eat in three months time. At *Chester*, the gentry give six-pence a pound for it, as it comes out of *Denbighshire*. It will never be hard, because it is a very short, fat cheese, made with the fattest of milk, and therefore tastes and eats like marrow, as being the richest sort of all others.

Cheese made with Sheep's and Cow's Milk together, in Hertfordshire.

I know a gentleman, in *Hertfordshire*, who,

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after

after he had sold his grass-fed lambs off fat, would have his ewes duly milked, for some time, and then mix their's with his cow's milk, for making cheefe for his family's use; and so delicate a sort it proved, that it was preferred to all others. There are several other ways to make cheefes, that are made publick; which take as follows.

Running Cheefe.

Take three pints of cream, and two quarts of strokings; set it mixed together on the fire, till it is as warm as new milk; take it off, and stir some rennet into it, and, when it is come, press it down with your hand, and then take it up as whole as you can; so lay it in your vat without breaking it: But, I should have said, after it is wheyed, heat the whey scalding hot, and throw it upon the curds, before you put it into the vat; when this is done, put a light weight first, then a heavier; after which it must be salted, and laid in nettles pulled from their stalks, and it will be ready to eat in three weeks; for this cheefe must not be put into a screw cheefe-press.

Two-meal Cheefe.

Heat the skim-milk as warm as the other meal from the cow; strain all through a sieve and cloth into a tub; then put about one
spoonful

spoonful of rennet to a cheese, and, in about half an hour, the curds will come; then gather them, with your hand, into a cloth upon a rack, and squeeze the whey clean out. Cut the curd into thin slices, and break it, or crumble it small into the vat; or squeeze it in the slices, and put it into a press, in a cloth, for twenty-four hours; then take it out, and salt it on both sides, when you are to put the cheese into a fresh cloth, and press it again all night; next morning take it out, and it is enough.

Somersetshire Cheese.

This, being one of the richest and largest sorts of all, is seldom made. Formerly they were more in fashion than now; and then, if one farmer had not milk enough, neighbours joined their stocks for the purpose; for this requires, at once, twelve cows milk to be mixed with all the cream from the milk of the same cows last night; both which must be strained into a tub, and then three, or more, spoonfuls of rennet must be directly put into it. When the curds are come, break and whey it well; and, when it is cleared from the whey break it again, and work three pounds of pure fresh butter into the curd, with as much salt

as you think proper; then put it into the press, and turn it in the press very often, washing and changing the cloths every time, till towards the last, and then use three or four dry ones. This cheese must remain forty hours, more or less, in the press, as it is bigger, or lesser. As soon as it is taken out, wash it in whey, and lay it in dry cloths, till it is dried; turn it often on the shelf, and, with due age, it will prove an excellent cheese.

Slip-coat Cheese.

Mix a little rennet with some new milk that is quite cold; when it is come enough, put it into the cheese-vat as whole as you can. Here let it stand for the whey to drain out, some time; then set a two-pound weight on it. As soon as it will hold together, empty it into clean wooden moulds, or cheese-vats, for this must not be put into a press, and here let it lie for two or three days; when it is dry, lay it on common dock-leaves, and shift it often, till it is ripe.



Heat two quarts of cream, till it is ready to boil; mix it with six quarts of cold strokings, one quart of boiled water, two yolks of eggs, and two spoonfuls of rennet, with a spoonful
of

of sugar ; stir these all together, till milk-warm ; when the curds are come, clear it, by degrees, of the whey, and press it at discretion. The third day, let the cheese lie all covered with nettle-leaves, and turn and shift it every day in more fresh ones, and it will be fit to eat in about three weeks.

Cream-cheese. +

Boil five pints of cream, and put it to three pints of milk, as it comes warm from the cow ; when all is of a blood-heat, put one spoonful of rennet to it, and cover it with a cloth, till it comes ; then take a coarse straining-cloth, and lay it in a large cheese-vat, and put your curd tenderly into it. On this put a cheese-board, with a two-pound weight on it, to drain for three hours, till the whey is out ; then lay it in another cloth, and put it into a lesser cheese-vat, with a board, and a weight of four pounds on the same. Turn it on cloths, every two hours, for one day, and, after it has lain thus all night, take it out next morning, without breaking, and salt it on both sides ; keep it in the vat, under the weight, one day more ; then put it into a wet cloth, and shift it every day, till it is ripe.

English Cheese.

Take two gallons of milk, three pints of
U 3 cream,

cream, and three pints of boiling water, mixed well in a pail together, and, when it is a little hotter than milk from the cow, stir into it a spoonful of rennet (or less, if it be strong) and let it be strained into another pail together. Cover it with a linen and woollen cloth, to keep it warm till it comes; then have your vat and cloths ready done out of scalding water. The vat must be made like a wooden mortar, as wide at one end as the other, without a bottom, and set it on a trencher, and, with a skimming-dish, bruise the curd as little as you can, and still, as it settles, put in more, and so do till all is in; and, when it is full, put a trencher on the top, turning the cheese-vat every half hour the first day, and two or three times the second day; but be sure to keep the trencher fast when you turn it. You must put a weight on, which must be made of wood, big enough to go within the cheese-vat, and on the top of that put a pound weight, and, as you turn it, change the weight to the other end of the cheese. At three days end, take it out, and rub the top and bottom with salt, and let it stand to dry, sometimes rubbing it with a cloth, to keep it from moulding. If you put it in some juice of marygolds, it will make it better to the eye and taste. You may make
this

this sort at any time in the summer, and it will keep all the year. *N. B.* If you make some in *May*, they will be fit to eat at *Michaelmas*. The marygold juice is to be got, by bruising the leaves in a mortar, and squeezing them through a cloth.

C H A P. III.

O F H O G S.

I Knew a miller, whose constant practice was to feed his hogs half way with wetted bran, and then fed them on with a fine pollard worth fourteen pence the single bushel, till they fatted and weighed forty stone a-piece, and though the flesh of them was looser than the corn-fed hogs, yet, by mixing a sufficient quantity of salt-petre among common salt, it very much improved it both in colour and firmness. But the flesh of such hogs always weighs heavier than that fatted with corn, and is generally whiter and sweeter; and it is for this reason, that the vale men seldom fat a hog with their beans, but will give it a couple of bushels of fine pollard at last, to take off any rankness the corn may leave.

Mine are never troubled with the garget or measles, since I have given them the powder of crude antimony among their meat, to the quantity of as much as will lie on a shilling, twice or thrice a week, to each hog, either when he goes about the yard, or while he is fatting; and which will also procure him a good stomach to his food: Good butter-milk and the best whey will fatten hogs well.

CHAP. IV. OF THE TEAM.

SECT. I.

General Management.

IN November most of our *Chiltern* farmers take their horses into the stable, because the season is cold, and grass commonly short, and keep them altogether in the same. Others refuse to take them in the stable at *Allhallontide* (which is the general time) or any other time in that month, if the horses can endure the weather abroad, on purpose to keep them in health, and save stable-meat. Others will keep them in the stable every night, and turn them out in the day-time for a week, two, or three,

three, if the weather is mild, as aforesaid. But the three farmers I am going to mention, I think, acted the best œconomists of any I ever knew. Their method was this; they had open hovels in their farm-yards, erected in the fashion of a long square, which exposes three parts of them to the air; but the fourth part, before their heads, is closed with boards, and a manger fastened to them. These hovels being covered with straw, faggots, furz, broom, or fern, or such like cheap stuff, their horses were let loose all the winter, to range, at pleasure, about the farm-yard, and thus at liberty to chuse, or refuse, their straw, or hay, at pleasure. And when oats, or other corn, or chaff, or grains, are to be given them, the manger is always ready for the horses eating their meat in a dry condition.—This excellent management keeps the horses from catching cold,—prevents foundered feet, keeps their heels from swelling, gives them a long wind, creates an appetite, and preserves them in health. Thus three several farmers, who lived very near together, ordered their horses, and had the best success from this sort of management of all others; for it is certain, that the close confinement of horses in a stable, is a sort of prison to them, and is accordingly thought

thought so, by several of the greatest farmers living between St. *Albans* and the town of *Hertford*, who strictly observe to keep their horses out in winter, in a yard, on purpose to go in or out at pleasure of a hovel, or half-house, under which they are well-littered, and the same in the yard, for the making more dung. This method is the most likely to prevent, or cure, the grease, or scratches, in horses, with a little outward assistance, especially, if they have room enough allowed them; for then they will enjoy an exercise, which will become a sort of remedy, to promote the circulation of the juices.

S E C T. II.

Feeding the Team.

IN winter our horse-keepers get up at five o'clock, and in summer at four, to bait their plough or cart-horses in the following manner: First, some mix split beans, bran, oats, and chaff together, and give it a little at a time; and, while they are eating, the horse-keeper curries and dresses the horses. Secondly, others give only oats, bran, and chaff, because, long-bran being somewhat of a chaffy nature, but sweeter and heartier, it will cause the horses

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to lick up the chaff the better; for, if they were to be fed with only pease, or slit beans, or with oats among chaff alone, the cattle would daintily toss the chaff up at the end of the manger, blow on it, and not eat their meat near so well, as when bran is mixed with it. Thirdly, I know a great farmer that always makes use of bran throughout the year, because he thinks it saves corn, and makes the meat the more agreeable. Fourthly, some give half a peck of oats to each horse, for a bait in a morning, before he goes to plough or cart, and the like in the afternoon; others give more. Some bait their horses all the afternoon, till they can eat no more manger-meat. Others take this method, to make them feed the better: After they have baited a little while in the afternoon, they give them a little hay, and then water them, which will cause them to eat their meat with a good appetite; and the better, by giving them a little at a time, of oats with sifted chaff, &c. And thus a right horse-keeper will make above twenty or thirty several servings of one peck of oats, and other meat with it, in one day, to each horse; and at night, after they have been taken from grafs, to live altogether in the stable, till *Christmas*; and then does the same with pea, or bean-straw,

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till *Lent* feed-time, when he begins to give
them hay.

S E C T. III.

Soiling.

MOWING and giving clover, or thatches,
on racks; and, though it is not com-
monly practised, yet may sainfoine be mowed
green, and given to advantage, in the same
manner. Others sow the three grasses of clover,
raygrass, and trefoil, all together, and cut it for
cattle's eating it green in racks, and they will
not only keep horses in health, but fat them,
or, at least, keep them in flesh and in heart
under their work, and, at the same time, pro-
duce abundance of dung with the help of straw.
In this management many farmers are not
careful to bleed their working horses above
twice a year, and that is commonly at *Christmas*,
and a little after their going into, or being fed
with artificial grass in racks, because, by their
constant working, the grossness of this feed
is prevented breeding yellows, surfeits, farcies,
staggers, and other ails, which often happen
by too great plenty of blood and too little work.
This method of mowing clover, or thatches,
and especially the latter, may be done in vale-
ridge half-acre lands, as well as in *Chiltern*
inclosed

inclosed fields : And therefore, where convenient ground lies near enough the stable, that farmer who neglects sowing thatches or clover, for this purpose, in my opinion, may be justly called a bad husbandman.

SECT. IV.

CHAFF.

Oats cut into Chaff for Feeding Horses.

A Great farmer in our parts, whose large farm consisted mostly of ploughed ground, seldom had hay enough to feed his horses, cows, and sheep, which defect to supply, he made use of oats to cut into chaff, thus:—The chaff-cutter's way was, to take a large handful of oats in their straw, and put them upon some cavings of wheat, barley, oats, or pease, that he first placed at the bottom of the long cutting-box, which being pulled all together forward to the knife, by the forked instrument, as the cutter wanted them, he made an excellent chaff of the mixture, that in a great measure supplied the place of hay.—Others take wheat-straw, and lay on the bottom of the box ; next, they put a layer of cavings on that, and then another layer of wheat-straw over both, which, being pulled forward as they wanted, are cut all together into good chaff. Thus either of these compositions will afford a farmer
such

such a manger subsistence, as will prove a hearty feed, especially for his plough and cart-horses; and is what every year comes under my own practice, notwithstanding I am master of some fine upland meadowground, as most is in *England*; but, by means of my thus cutting chaff for my cattle, I am enabled to sell the greater quantity of hay. Without chaff, I am sure there is no such thing as feeding plough or cart-horses as they ought to be fed. Cut chaff is a most cheap feed for making a little quantity of oats, or other corn, go much further in feeding cattle, than corn alone will. It will make beasts drink heartily, and consequently have the better appetite to their meat; helps to dry up humours; prevents the breed of worms; and by mixing oats with chaff or beans, the less corn serves; and is not only serviceable in this respect, but as it occasions the less quantity of corn to be given to an horse, it makes this mixed food the healthier to him; for if all naked corn was to be given to an horse, it would be apt to heat him too much, and breed farcies, and greasy heels. It is this famous engine that consumes straw in the most profitable manner, and makes an ill-scented hay sweet; for by cutting a coarse, rank, and even hay a little stinking, if it is mixed with the sweet chaff of straw, cattle will eat it in this form, when they will not in hay;

as I and thousands of others daily experience, when hay has been damaged by long rains in the field. This profitable engine, if made in a right manner to the best advantage, may be so worked as to cut sixty single, or thirty double bushels of chaff in one day, by one man, as is now-and-then done by some of our best chaff-cutters, in a mixture of straw and hay, which they generally cut together. In short, this engine is kept by most great farmers in the southern parts of *England*, and even by the best husbands that rent small farms; because it has not only these before mentioned good properties belonging to it, but it also serves to employ servants in rainy days within doors, when they cannot work without. And when one man cuts thirty double bushels of chaff in one day, he earns half a crown; for with us the price is one penny the double bushel cutting, that is given to those who are owners of this tool, and who go about with it to cut chaff, at those farmers houses where the farmer is one of the lazy, poor, and indolent sort, and has not one of his own.

SECT. V.

Straw.

THE haulm or straw of horn grey pease, that is reckoned to be one of the wholesomest

some of the most serviceable sort of all the pea kind, supplies most *Hertfordshire* farmers with stover for their horses, cows and sheep, the greatest part of the winter and spring; and, when it has not been much washed by rains, and got in dry, the cattle will eat it well, and then, with manger-meat, the horses will plough and cart under its feed, without the help of hay, or any other straw, till *March* or *April*, when all pea-straw gets so dry and harsh, that the cattle eat it with reluctance.

BOOK XX:

Of the FENCES *and* WOOD.

CHAPTER I.

OF PLASHING.

FEBRUARY gives the farmer a late opportunity, not only to plaish and make his old hedges, but likewise to plant new ones; and this in a right time, for *October* and *February* are the two best months in the whole year for this last purpose. When a hedge and ditch are to be made in new ground, and on a level, a person may save much charge, by employing, in the first place, the plough, which will turn two or three furrows of earth against each other, and thus raise part of a bank for planting quick-sets in, at a very little charge. When this is done, the workman with his spade, in making the ditch, must throw out so much, as will raise a bank on the ploughed earth six inches; and then he must

begin and plant a row of white-thorn sets, whose heads must be cut off within six inches of their roots, laying them slope-ways, with a collar set at every ten feet distance, and an elm, or white-wood tree, at every twenty feet distance, as the owner pleases.

Although *April* is the last month in the spring season, that admits of plashing hedges, yet no prudent farmer will have this work to do now, unless mere necessity forces him to it. Necessity, it is true, may happen upon two accounts: one, by long frosts, snows, and rains; the other, by multiplicity of business, and scarcity of hands. All, or part of these reasons, may be the cause that he is forced to cut and plash hedges in *April*, if the warm weather has not rarefied the sap of the wood, to the degree of what we in *Hertfordshire* call boxing; that is, if the rind is not liquefied so much, by the sap, as to part from the wood, on bending down a plash. If it is, this work (let the occasion be ever so pressing) must be let alone; because, if it is performed at such a time, it would surely kill so much of the hedge, as where the cuts or plashes are made. But, where this work can be securely done, it is of the greatest importance to a farmer; because this piece of necessary husbandry is the foundation of many advantages to him. It is by a good hedge that he has not only

fuel for his own use, but also, for selling some to others. By a good hedge he can keep his corn, his grass, his turnips, his rapes, and other vegetables, from the rapine of ill neighbours, in a much securer manner than those farmers can, who sow these in common, open fields; not that a chiltern farmer can say, I will lose none of them: No, there is none can say this, because the common sort of hedges is not capable of preventing the arch thief; but a hedge that is half thorn, and plaisted, and made to grow very thick, and to a good heighth, may intimidate the lesser, younger thieves, and women, from attempting to steal the farmer's corn, and other of his field ware, for fear the difficulty of going backward and forward, over his hedges, should betray them; which sometimes happens, by the cracking noise of the wood, or by a person's lying as a spy, in ambush, by the cover of another part of the hedge.

An old farmer of my acquaintance sowed a four acre field with turnip-feed in 1743, which taking all over the land very well, he bestowed due houghing upon them, and they proved a fine crop. Now this inclosed field, though it lay but about a hundred and twenty poles off his dwelling house, yet, I heard him say, he did not expect to enjoy the benefit of above two thirds of the crop, because a path-way lay through this

field, which gave the pilferer a very great opportunity to carry off his plunder; however, as it happened, he got three and twenty shillings for every acre of these turnips, after they had been heartily thinned by Mr. Thief, by selling them to a butcher, that fed them off with his fatting sheep. This shews how necessary a good fence is at all times to be kept up; for, at best, few farmers are free from more or less of their rapine, especially those, who are either lame or decrepid by old age, or live at a great distance from their out-fields. Cattle are likewise restrained from getting out of an inclosed field, where the hedges of it are in good order, as well as others from getting into it.

It is by this great and strong barrier of a good hedge, that night-roguers are prevented turning in a cow, horse, or sheep, into a field, for filling their bellies at the farmer's cost; which I have known done by a petty dealer, or higler, who, keeping a scrub horse, for carrying fish about the country, would turn him, by one means or other, into a field, late at night, and fetch him out early in the morning, before any of the hard-working farmer's servants were up. By a strong fence, the great damage of paying cost for what any stray cattle may occasion, by their breaking into a neighbour's field of corn, is avoided, and the farmer made to enjoy his sleep with the
greater

greater assurance, when his field is surrounded by an able well-made hedge and ditch. In 1742 I had a hedge made, and a ditch three feet wide, in all, from the live stake, scowered so deeply up, as to raise the earth on the other side eighteen inches higher than the common surface of the ground; and though this was almost a hazel hedge, yet, by the help of such a deep scowered ditch, and laying down the plaishes thicker than ordinary, the hunters, shooters, and poachers, have not since been able to press it so much as to give any cattle of my own, or neighbours, room to go out, or into it, by any gap; whereas heretofore, when the same hedge has been made, and the ditch scowered up, by a bad workman, there has been considerable damage done by my neighbours cattle breaking into my field, and mine into theirs.

The alder, the willow, the fallow, the white wood, the poplar, and the withy, are the right woods for moory, or watery grounds; the silver beech, the horn beech, the maple, the hazel, the witch-elm, the ash, the oak, and the black and white thorns, with several other sorts, for drier; they grow in great variety of beauty and profit.

It is a maxim among farmers, that a hedge, preserved, will pay as well as corn; that is, the ground, on which such hedge stands, will bring as much profit to the owner, as if corn grew on

the same; especially, if the hedge consists of only fallow and thorn planted together; for these two not only yield profit by their fire-wood, but secure the field against the invasions of man and horse, and other cattle; because the fallow may be all cut out close to the ground at six years end, as they stand a little forwarder to the inside of the field, than the thorn does, and faggots made of it, which we commonly sell for fourteen shillings a hundred: but the thorn must remain growing till twelve years end, when, by that time, the fallow will recover its former high growth, and be cut with the thorn together, leaving such a part of both behind, as will be enough to make a standing hedge plaished in a clever manner, and become a fence of three feet high, at least. Observe this as a standing rule, that you make your young hedges forward in *November* or *December*, and they will get a year's shoot extraordinary in nine years time; for, if you make such a vigorous hedge late in *February* or *March*, both stumps and plaishes will be apt to bleed, and run out their sap, to the great weakening and decay of the hedge. But an old hedge is not so apt to bleed, as we call it; therefore, such a one is best made in *February*, or *March*, and then this will likely get a year forwarder in nine, than if it was made too early, because an old hedge is not so apt to bleed and run

run out its sap as a younger one is. And this ill property attends the making an old hedge in *November*, or *December*, its stumps and roots, being through age got hollow or spongy, the wets are apt to soak into them, make a lodgement, and rot them; but when such an old hedge is made in a spring month, the new shoots and heat of the increasing sun, suddenly drying away moisture, will in a great measure prevent the misfortune; therefore make some of your hedges forward, and others later, that you may manage this most necessary part of farming, to the greatest advantage, and have wood to burn at a due age. For as the verse or proverb says—
New beer, new bread, and green wood, will make a man's hair grow through his hood—
Plaishes are cut in pretty near the bottom part, as can well be done, and the plaish or live stick must be bent easily and warily, to lie rather inwards, and the head or end of it outwards, cutting up the remaining stump, or piece of the bent plaish, smooth, low, and sloping, the better to shoot off the wets, and make new branches or shoots. A workman contrives to lay as much of the quick at bottom as possible, because here the attacks of hogs and other cattle are first made; and, if there is not live wood enough to fill up the whole hedge, then the upper part must be compleatly furnished with dead wood.

If a live stake bends too much inwards, cut it about four, eight, or twelve inches high, with a chop down the middle part of it, and put a chip in the gap; thus it may be made to stand to your desire and shoot out in more branches for so doing, always taking care to leave as many live stakes as are necessary, for these admirably well strengthen the hedge. When the hedge is ridden, as we call it, that is, when all the superfluous wood, that is not to be kept in the new hedge, is taken out, and when the earth of the ditch is thrown on the roots, and when all the wood is plashed down, the next work is to eddow the hedge. Now what I mean by eddowing a hedge is this; The workman gets some briars, or some long sticks, about half an inch, or an inch in thickness, and twists them about the heads of the stakes, in order to bind the upper part of the hedge firmly together; and, for managing this chief article the best way, a good workman will twist his eddows against the plaishes, because thus they bind the tighter. Others eddow their hedges the same way the plaish lies, which is wrong. Some, again, will put or place one eddow before another; others will work them even; but then they are not so strong as when one is worked before the other; because, in this manner, one keeps the other from rising. Now the benefit of a ditch-hedge
(which

(which is the best of all others) is, that it is a sort of double fence for keeping out cattle, especially when a rough brow of thorn, that grows among it, is laid slope-ways, on the outside next to the ditch, which adds much to the security of it, and discourages cattle from attempting a breach.

In making any hedge, there ought this particular care to be taken, that it is not made in a hard frost, nor too late in the spring. The damage arising from the first will be, that the frost will make the plaishes fly; that is, when the workman makes a chop with his bill, and afterwards bends the plaish, to lay it down, it will quite separate, and then it is spoiled; which mild weather prevents, for then the plaish will bend to desire, and yet not separate from the remaining stump: Likewise, if a hedge is made too late in the spring-time, when the sap is risen, or to write more properly, when the sap is so rarefied and thinned, that the buds appear swelled, and the leaves ready to come out, then it is dangerous making or plashing a hedge; because, by the firmness of the sap, the rind will part with the wood, and then the consequence will be, having a dead plaish in the hedge, instead of a live one, to the great weakening and damaging of the root.

Such

Such a hedge best grows where there are no manner of trees planted in it; for it is these that often reduce good hedges into bad ones, by their unnatural drips on the underwood, whereby in length of time they do more harm than the value of their timber amounts to, especially if they be oaks, ashes, or walnuts; these are so prejudicial to their lower neighbours, both by their roots and heads, as to spoil their growth by saturating and envenoming their boughs by their shade and drip, and exhausting the goodness of the ground about them.

CHAP. II.

OF THE SORT OF WOOD.

Sallow.

THIS wood in particular is so prone to grow, that if an arm, or piece of its head, from four to fourteen feet in length, is buried in a ditch or trench, well manured beforehand, and covered shallow with mould, it will grow; provided it be done when the leaves are coming out, for then the sap will run into shoots; and also, if a place or two are left open in such a piece for the shoots to come out at, as we do to encrease our fallows, &c. in hedges and woods.

It

It is this that will, beyond all others, suffer itself to be cut to profit in a hedge at four or five years end; so that where it is planted with white-thorn (as it best is) it may be made twice to once of that: Here then the farmer has three crops of hedge-wood in nine or twelve years, and at the same time enjoys the best of fences.

In a copse or hedge the fallows may be thickened, by giving a pole a chop at bottom, that it may easily bend to the ground, where it must be kept forced down, by driving wooden hooks in, and then cover it all over with mould in the nature of a layer, leaving here and there an open place for the shoots to come out at as is mentioned in treating of the elm: besides, a fallow of all others is the easiest and quickest propagated; insomuch, that if a stake is drove into the ground in any of the winter months, when it is not a frost, it is six to one odds if it does not grow. I have known a hedge, in which fallow and white thorn have growed without the interruption of trees, that forty poles at nine years end has returned four hundred faggots, worth twelve shillings a hundred.

Beech.

By mast, either in the month of *October*, or in *February* or *March*, it may be sown in a drill

drill almost close to each other, and then the earth covered lightly on the same, and over that some horse-litter to defend them from the frost and sun, but not in too great a quantity: This I suppose to be done in a bank of mould, thrown up by making a ditch of two feet deep, and as much wide. But our common method here is, to raise a hedge by sets, which is the quicker and readier way; for of late it has been discovered, that no wood makes so strong and profitable a fence on chalky grounds, as the beech; because this will grow and flourish there when others will not. And here it makes a most noble fence against the trespass of cattle; for, in its nature, nothing of *English* woods excels it for hardness, but the box, yew, &c. the plaish of it being so strong, that it will lie across in a hedge like a rail, and not yield to the efforts of horse nor cow, as several of the afore-mentioned sorts will, which renders its poles of great use.

Hazel.

I observe, that in five plaishes, hardly one lives; and if the hedge is not made in nine or twelve years, the bodies are apt to die, but it must never be made under nine.

Alder.

Its wood is best in watery foundations to build on, where it is said to harden like a stone, and the very small heady part will serve to lay in trenches, that drain land to keep it hollow for the water to pass.

Elm.

Or lop a young elm, the lop being about three years growth; do it in the latter end of *March*, when the sap begins to creep up into the boughs, and the buds ready to break into lengths of four feet slanting, leaving the knot where the bud seems to put forth in the middle; inter these in trenches of three or four inches deep, and in good mould well trodden, and they will infallibly produce you a crop; for even the smallest suckers of elms will grow (being set) when the sap is newly stirring in them. There is yet a fourth way no less expeditious: Bare some of the master-roots of a vigorous tree, within a foot of the trunk, and with your axe make several chops, putting a small stone into every cleft, to hinder their closure, and give access to the wet; then cover them three or four inches thick with earth; and thus one single elm, well ordered, will make a fair nursery, which, after two or three years, you may separate and plant in the
place

place designed for them. Hedges are usually made from *Allballentide* to *Lady-day*. If one is made too thick, it will not grow so well; the thinner the hedge is made, the better it grows, if there be wood enough left to make a fence.

C H A P. III.

THE DURATION OF HEDGE WOOD.

HASLE will stand well twenty years in a spring or copse; but in a hedge it should be made at nine, or twelve, at most, else the hedge will suffer by the decay of plaishes. Sallow, after nine years growth, will decay, by growing hollow. Maple will endure a long time; but ash will grow, and last time out of mind. Maple is a soft wood, but not so soft as fallow; is apt to fly in plashing down, but grows as fast or faster than any, except fallow. Sallow, when it grows among thorn in a hedge, may be cut out at six years end; and, at six years end more, both the thorn and fallow may be made at one and the same time into faggots, or otherwise, as it is generally practised in the *Cbiltern* or flinty country in the greatest perfection, and to the greatest profit, as I said before.

CHAP. IV.

OF COPSE WOOD.

Of felling and disposing of Spring or Copse-wood.

JANUARY is a very proper time to fell all copse or spring wood, and finish the work thereof, because next month is generally a very busy one, with many farmers, who sow considerable quantities of ground, with pease, beans, and oats. In our *Western* part of *Hertfordshire*, we fell our spring-wood at twelve years growth; and as it generally contains ash, fallow, hase, maple, &c. we either have it made into faggots, to sell into the vale of *Aylesbury*, or else fell it in ranges and sell it according to the number of poles, for making hurdles, chair-frames, or other uses; and the quantity of fire-wood besides, at the rate sometimes of twelve, or eight, or six pounds an acre; for here we save none for hoops, or hop-poles. But, in the *Eastern* part of *Hertfordshire*, their spring-wood, for the most part, runs on horn-beech, which being a very hard, but good fire wood, is a slow grower, and therefore do not fell it under sixteen years old. Also about *Chaffon* in *Bucks*, they have many acres under the growth of birch, which they sell for broom, fire-wood, &c.

Uxbridge, their copse wood is chiefly halle, and bought by or for the hoop-bender, altogether. And so, in many other parts, there is variety of spring-woods and managements; as yew coppices, which require a long time before they be felled: Others of alder, withy, willow, or oziers; and, in *Norfolk* and *Suffolk*, they fell their broom and whin plantations, which, by their five, or seven years growth, appear as high and like copse-wood, at a distance. In any of these, there is required very good management to make the ground pay in coppice-wood as much as indifferent land will with good husbandry in corn or grass. In our *Chiltern* dry country of *Hertfordshire*, we find the fallow-plant to pay the best of all others. An acre of all fallow has been fold, with us, for twelve years growth.

B O O K XXI.

Of the GENERAL BUSINESS
of the FARM.

C H A P. I.

O F T Y T H E S.

THE following account of tythes came to my hands, by means of a great dispute that happened between a minister in *Hertfordshire* and a farmer his parishioner, who, from a trifling cause at first, carried on the matter so far, that a tryal commenced before the barons of the Exchequer, which terminated almost to the ruin of the farmer, and to the great expence of the minister, who, though he got the advantage at law, yet run out a considerable sum of money by the farmer's breaking, and getting his person protected by a statute of bankruptcy; I say, the copy of the following

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queries and answers being obtained by the farmer for his instructions, I got the opportunity of writing out another by it, which, as it was given under the hand of that eminent learned counsellor in the law Sir *Constantine Phipps*, I suppose it may be depended on as true; the person, whom it was writ first for, living in the parish of *St. Peter's*, in the town of *St. Alban's*, in the county of *Hertford*, 1720.

Query One. Tythe-milk; whether the parishioners are obliged to carry the same to the vicar; or, whether the vicar is not obliged to send for the same to the parishioners places of habitation?

Answer. I conceive the parishioners are not obliged to carry their small tythes to the vicar, but he is obliged to fetch them.

Query Two. Tythe-calves; how the tythe of calves is to be paid to the vicar, if bought and suckled, or home-bred?

Answer. For calves that fall in the parish, the tenth is due for tythes, unless there be a particular custom for tything the calves in the parish; but for calves bought and suckled no tythes are due.

Query Three. How the tythes of dry cows of the farmer's own, and cows and horses of others taken in to winter with hay and straw, is to be paid to the vicar, or any tythes due?

Answer. If the farmer's own cows and horses, and other persons, are only fed in winter upon hay and straw, and not grazed, I am of opinion no tythes are due: But, if they are grazed at all, tythes must be paid for such grazing after the rate of two shillings in the pound, according to the value of the herbage.

Query Four. Whether sheep and lambs bought in and killed in the farmer's own house, in a little time after so bought, ought to pay tythes, and in what manner, if any?

Answer. I am of opinion that sheep and lambs, bought in and killed in the farmer's own house, ought to pay tythes for the time they were fed in the parish, after the rate of two shillings in the pound for the value of the herbage, unless there is a particular custom in the parish for the payment of tythes for the depasture of sheep.

Query Five. How lambs bred and fattened, or kept for stores, ought to pay tythes, and at what age they are to be tythed?

Answer. I am of opinion that tythes ought to be paid for lambs bred and fattened, or for stores, and that such lambs are tytheable, when they are able to live without the ewes.

Query Sixth. How pigs are to be tythed, and at what age, and out of what number the vicar can claim or demand one?

Answer. Pigs are tytheable when they can live without the sow, and the vicar is intitled to one in ten, unless by the custom of the parish there be any other particular way of tything pigs.

Query Seventh. Whether the vicar can take tythe-eggs and tythe-chickens both at one time, the chickens coming out of the eggs that were tythed before ?

Answer. I am of opinion, if the vicar take tythe-eggs, he is not intitled to the tythe of chickens coming out of those eggs which he had tythed.

Query Eighth. Whether the vicar can take tythe for the farmer's own horses, which they plough and sow and till their land with ?

Answer. Tythes are not due for horses used for the plough, or the farmer's own use on his own farm in the same parish.

Query Ninth. Whether the parishioners are bound to house the fruit, when gathered for the vicar, or set them out on the ground where they are gathered ? If lost by the vicar's neglect of sending for them ; whether the vicar shall bear the loss ?

Answer. I am of opinion the parishioners are not bound to house the tythe-fruit, but the tythe-fruit ought to be set out on the ground. But notice ought to be given to the vicar, when the fruit is gathered ; and, if it be spoiled

spoiled by reason of his not fetching away his tythes in due time, he must bear the loss.

Query Tenth. Whether turnips which fattened sheep ought to pay tythes, when the said sheep have paid tythe-wool before, or eaten with store-sheep and lambs, that will pay tythe-wool afterwards?

Answer. If turnips are drawn and afterwards eaten by sheep, tythes are due for such turnips. But, if the turnips are not drawn but eaten upon the ground, no tythes are due for such turnips, but only a tythe-herbage for such sheep as are not shorn, nor have any lambs in the parish.

Query Eleventh. What tythes of pigeons are due to the vicar *from* those that keep them, and rent dove-houses?

Answer. Tythes are due for young pigeons, and the vicar is intitled to the tenth of the value, if they are sold.

Query Twelfth. Whether meadow lands, that have paid tythe grass to another person, ought to pay tythes again for the after-pasture to the vicar for the same year?

Answer. I am of opinion, that the occupier, having paid tythes to the rector for the hay, ought not to pay tythes for the agistment of cattle to the vicar for the after-pasture in the same year.

The parish of *South Mimms*, in the county of *Middlesex*, not having at any time paid their small vicarial tythes in kind, but a rate of three-pence *per* pound instead thereof, and the present vicar insisting for the future to take the same in kind, they desire to be informed in the method and manner the law prescribes in the payment of the same; whereas, in this case, there is no custom to guide them in any of the particulars.

Query First. How the tythes for the depasturing of barren cattle are to be paid, whether according to the value of the ground, or the tenth penny for which such cattle is sold; and if in the last case, if the prime cost is to be deducted, and whether it is to be paid according to the proportion of time such cattle feed thereon, and how such proportion is to be made, or if the vicar is in any case intitled to a tenth penny, unless by custom?

Answer. If the occupier of the land takes in cattle of others to agist, the tenth part of the money received (as I take it) is payable for agistment: For his own cattle fed thereon, tythes are to be paid according to the value of the land, after the rate of two shillings in the pound for the tenth of the value of the feeding; to be estimated for the time they shall be fed. But I know of no such rule of paying

ing of the tenth penny of what such cattle is sold for.

Query Second. If a ground be eaten with profitable, as also with barren or unprofitable cattle; if the greater part of such cattle being unprofitable shall free the rest?

Answer. Tythe must be paid for the unprofitable, and the profitable will not exempt the rest.

Query Third. If any tythes are to be paid for after-pasture, fallow or corn-stubbles, or for any cattle or fattened oxen, or the like to be fed thereon, or for the milk of milch-cows while they go on such after-pasture, fallow, or corn-stubble?

Answer. Of common right no tythes are to be paid for cattle fed on after-pasture, fallow, or stubbles; but the milk of cows, being a different increase, will be payable, while they go on such after-pasture, fallow, or corn-stubble.

Query Fourth. Whether barren cattle are fed partly on after-pasture, or partly on pasture-ground, how the tythe of such cattle is to be paid?

Answer. Tythes are to be paid for the time they feed on pasture-ground, and it is the parishioners interest, who claim any discharge,

to distinguish how long they were fed on such ground, and how long on the after-pasture.

Query Fifth. If any tythes be paid for milk of cows, while each cow feeds on hay, which before hath paid tythe to the impropiator, or for oxen fattened on such hay only?

Answer. I have no doubt but tythe must be paid of the milk of such cows, the milk, as I have before observed, being a different increase; but I do not well conceive what tythe can be paid for oxen, which are only fattened with hay.

Query Sixth. Where barren cattle are fed on common ground, if the tythe is to be paid to the parish where such common lies, or to the parish where the owner lives?

Answer. Cattle feeding on common or waste ground, whereof the parish is not certainly known, are by express provision by statute of 2 *Eliz.* 6th, to pay tythes to the parish where the owner dwells; but I think it is otherwise where the parish is certainly known.

Query Seventh. If any tythe is to be paid for cattle killed and eaten in the house, or for the milk of cows eaten in the house?

Answer. In my opinion this circumstance alone will not carry any exemption.

Query Eighth. How the tythe of milk is to be paid, whether every tenth part of every
time

time of milking, or every tenth meal or milking? And if obliged to give notice every time of milking constantly every day, at such a time or hour, is sufficient? And if the tythe of the milk is not fetched away by the vicar, what is to be done with it?

Answer. It has been adjudged, that of common right the tenth meal ought to be set out by the parishioner at the common milking-place, and though I think the law does not require notice of the setting out, yet, as to fetching it away, I think it necessary to render the vicar inexcusable.

Query Ninth. Where milch cows feed partly in one parish, and are milked only in one parish, if the tythe of the milk is to be paid only in that parish where they are milked, or otherwise?

Answer. I think the tythe-milk ought to be paid to each parish, for the time the cows are fed there.

Query Tenth. When the tythe of lambs, pigs, and calves, &c. is to be paid, if the parishioner hath not ten lambs, &c. in one year, are any tythes to be paid; and as the custom of the parish is to suckle all their lambs, till fat and saleable, if, in this case, the vicar can oblige the parishioner to pay tythe for the lambs, when they are suckled and fit for market; or the tenth,
penny

penny when fold, or only as they fall and are able to live without the dam?

Answer. I take it, that of common right they are tytheable, when weanable, and they can live without the dam. If fewer than ten, the tenth part of the value at such time is to be paid.

Query Eleventh. Whether any tythes are due for lambs that fall before *Lady-day* next, from which time the vicar hath given notice to take his tythes in kind?

Answer. If there hath been a running composition, which hath included all sorts of tythes, I apprehend that no tythes will be due for lambs that fall before *Lady-day* next, from which time the vicar hath given notice to take his tythes in kind.

Query Twelfth. Where ewes are brought from one parish to another ready to lamb, or ewes having just lambed with their lambs; if any tythes be due to the vicar for such lambs not fallen in the parish, or for lambs fallen from such ewes that have fed altogether in another parish?

Query Thirteenth. Whether, a parishioner taking grass for a month or two in another parish for ewes ready to lamb and fall there, if the vicar of the parish from whence such ewes come, and where the owner lived, shall have the tythe of such lambs?

Query Fourteenth. When ewes feed partly in one parish and partly in another, and the lambs fall, and the sheep are shorn in one parish only, if the tythe of the lambs and wool is to be paid only to that parish where the sheep are shorn and the lambs fall?

Query Fifteenth. Whether deer or conies in a park, which the occupier rents and makes profit of the same deer and conies by sale, pay any, or what tythes?

Answer. Of common right no tythes are due for deer or conies, and I do not know of any authority in law that alters the rule, though profit be made of them by sale.

Query Sixteenth. If underwood, that is used only in fuel for the house and in fencing the ground, pay any tythe; or, whether the same made into faggots and sold pays to the vicar; and how and whether the tythes of willows, hawthorn, birch, elder, thorn, &c. are vicarial tythes?

Answer. Underwood so used is looked upon to be discharged from payment of tythes, either *per legem terræ*, or by prescription: but, made into faggots and sold, is tytheable. But, as wood is esteemed a great tythe, I apprehend, without usage to the contrary, it is payable to the impropiator, not to the vicar.

Query Seventeenth. If turnips are vicarial tythes, and if any turnips be due where it is a second crop of the ground that hath paid tythe before, or where they are eaten by profitable cattle?

Answer. Turnips are esteemed a small tythe, and may, as such, be payable to the vicar, if intituled thereto by usage or endowment; and, by prescription, the parishioner may be discharged from payment of the second crop.

Query Eighteenth. If any of the above-mentioned tythes (of which hath been no custom or usage for the payment thereof) be not set out or paid, whether the vicar hath any remedy by the statute of 27 Hen. VIII. ch. 20. or by the late statute for the better recovery of small tythes, or any other: and what remedy in this case?

Answer. I think the vicar's proper remedy, in such case, would be by bill in the court of *Exchequer*.

From the Tything-Table.

To the Rector. Corn, hay, timber, &c. are due.

To the Vicar. Eggs, fowls, beasts, fruit, underwood for fueling sold, &c.

Barren Lands. Improved, are free from tythes for seven years; but not land got from the sea, nor marsh lands drained.

Fallow

Fallow Ground. Tythes are not due here, though the occupier has some profit.

Corn. Parishioners are to cut down and bind in sheaves. The parson is to take away in due time, or sued for a trespasser. The farmer is not bound to watch them.

Cutting of green tares for feeding cattle, grain, or corn, sown on head-lands, pease and beans eaten in a man's house, raking and stubble, are not tytheable.

Where corn has grown and paid tythes, the same year, are not tytheable again.

Grasses. Grass, hay, clover, lucern, cinquefoil, &c. applied to feeding of cattle, are tytheable every tenth cock, according to the custom of places. Grass cut for sustenance of cattle, the owner not having sufficient otherwise, is not tytheable.

After-meath, or after-pasture, pay no tythes unless by custom.

Pasturage for beasts kept for plough or cart, or for pleasure, pay no tythes.

Cattle. Tythes shall not be paid for young cattle bred for the plough or pail.

If tythes are paid for wool, the sheep shall not pay for their herbage.

Oxen or steers, kept for sale, pay tythes for their pasture; but not wethers, because they render tythe of their wool.

Timber

Timber trees. Oak, ash, elm, &c. are not tytheable, nor trees growing in parks, forests, chaces, and the branches, which shoot and bark, are discharged with the bodies and fruit-trees; and aspin, beech, hawthorn, holly, willow, maple, &c. where used for building.

Underwood. Tythes are generally due, if sold standing, payable by the buyer: if felled, by the seller. In like manner broom and furz; but are not tytheable, where used for house, hedge, or cart. Acorns, mast, &c. if they drop from the tree, and swine eat them, pay no tythe; but if severed for feeding swine, they do, or if gathered and sold. Apples, pears, plums, &c. in inclosures, gathered for sale, pay tythe in kind.

Fowls and Eggs. Tythes of ducklings and geese, are usually paid in kind; but of hens and turkies, most commonly in their eggs, as custom guides. No tythes of swans, turkies, pheasants, partridges, pigeons, &c. for them, or their eggs are due by right, they being wild by nature, unless by custom. But, if tythes be paid for the young, there shall be none for the eggs. No tythes are due for pigeons consumed in a man's house.

Beasts. If a man has ten calves, colts, lambs, &c. in one year, tythe is payable; but, if he has fewer than ten, none in kind is to be paid, that
year,

year, except custom warrants it; but, in such cases, there is usually a rate-tythe, or the parson carries till next year. They are payable, when weanable.

Milk-cheese. Under this head is comprehended butter and cheese. Milk is to be paid every tenth meal, and carried either to the vicarage-house, or church-porch. A number of cheeses may discharge the milk, for no tythe for cheese or butter is due of itself, being made by labour.

Wool and skins—of sheep and lambs are tytheable, proportionably to the time fed in the parish; to wit, eight pounds in eighty, if a year; four for half, three if a quarter, the twelfth if a month, and nothing for less than thirty days. By custom, it may be paid at *Lammas* day, though due at sheering-time. If shorn, and die before *Easter* following, no tythes are due; nor for sheep that feed after the corn is reaped. Sheering of sheep, to preserve them in their walks from brambles and vermin, is not tytheable. If the owner kills his sheep, he must pay tythe for the wool, but not for the skin; nor for pelts or fells of sheep which die of the rot.

Deer, Hares, Conies, &c. No tythes are due for deer, conies, wild-fowl, or fish taken out of the sea. But trouts, taken out of a river, are adjudged tytheable.

CHAP. II. OF SERVANTS.

AS there is no such thing as carrying on the business of farming without some sort of servants; it highly concerns the farmer to endeavour the choice of the honest skilful ones, because, as his servants are, so will his business be well or ill done; though I am sensible that many of them are spoiled by the ill conduct of their masters.

The Character of a Ploughman.

This is the chief servant, and the most useful of all others about a farm; for upon his skill and diligence depends very much the success of corn crops, &c.

All, or most ploughs, some ploughmen will hold exquisitely well, by laying their thoroughs, or furrows, so even, that one will be hardly higher or broader than another; for which reasons, many of the better sort of ploughmen will make a bargain to do nothing else all the year, than the following works: to hold plough eight hours, from six to two o'clock, whenever the weather permits; at hay-harvest, to act as head man in mowing, and leading on the rest of the company; at corn-harvest the same, in reap-

ing and mowing, for which reason he is called Lord, or chief of the workmen. In the snowy and frosty seasons, when he cannot go to plough, he will drive the team or dung-cart, and also, every time it draws corn to market, he accompanies it; but refuses to do any other work, unless it be to attend at the smith's shop, to direct him in making and setting the point of the share aright, that is to say as he would have it, or to mend the harness upon a pinch of necessity, when the collar-maker cannot be had; or, to shoe all the horses, which now-a-days is very common for the ploughman to do, as a saving article to a farmer, because he thinks it will answer, if he gets no more than the old shoes clear, which helps towards making share-points and other odd iron work. From the farmer that keeps eight horses, to one that keeps but five, a ploughman will insist on having those privileges insured to him; and not only in these, but in some others, as his being allowed a horse-keeper under him, that takes him mostly off the trouble of looking after the horses, that drives his plough, that gets up every morning before him, and who attends him every time he drives the team to market; but, in vales, the case is somewhat altered, for here the farmer seldom, or never, hires a horse keeper, because in this dirty wet country, where the sight of a stone is a rarity, their horse-shoes, and their

socket, broad-share, and coulter belonging to their foot plough, last a long time, so that the ploughman here has seldom occasion to go to a smith's shop, and, therefore, has the more time to look after his horses; and, accordingly, he is hired to plough, and look after his horses himself; and the boy, that drives his plough, is one that is kept not only for that, but to fold and unfold, where there is no shepherd kept, to look after the cows, and do any odd jobs; nor do they employ so much care and pains in dressing and managing their horses in vales, as they do in chiltern countries, by reason they are so liable to be dirty, as lessens the pride of their horse-master; nor have their ploughmen so much wages as the chiltern ploughmen: and, to give such a compleat ploughman his just character, I should say, he ought to be one capable of advising what is best to be done with such a piece of ground, what sort of ploughing is most proper for it, what sort of seed is most requisite for it, what manure, or dressing, is most natural to it, and when is the best time to sow it; when grass and corn are fit to mow, and wheat to reap, pease and beans to hook, and so a hundred things more.

The Tasker Servant.

This man I take to be the next useful servant to the ploughman that a farmer has. His task is

is commonly to thrash five and twenty bushels of wheat in one week, and clean it for market; I say, this is his common stint, for wheat seldom yields so well as to confine him to thirty bushels, but sometimes to less than five and twenty; but this is regulated in proportion to the common yield of wheat in the same parish, for custom very much governs in the farmer's business; as I am going to shew by this one example of a tasker, who generally thrashes his five bushels of wheat in one day, and cleans five and twenty bushels on every sixth day. If a tasker is a clever workman, and the wheat yields well, he will do his week's work compleatly in five days time; and for this purpose he works the harder, that he may enjoy the sixth day to himself.

A tasker ought to be very cleanly about his work, and therefore most of them have a pair of shoes made out of an old hat, for by the tread of this he cannot bruise the kernels. A tasker seldom leaves the wheat-barn, till the corn is thrashed out; and when he thrashes either barley, beans, pease, or oats, if they yield well, his common task is thus:—To thrash and clean five quarters of barley in one week; to thrash and clean five quarters or seams of oats in one week; to thrash and clean thirty bushels of beans in one week; and to thrash and clean thirty bushels of pease in one week, and all these fit for sale in a market; or, according to the quantities (as I

said before) generally thrashed in the neighbourhood. But, to prevent disputes about work, the master commonly makes a bargain with the tasker at hiring, by telling him, that, if he lives with him, he must thrash so much wheat, or barley, or oats, or beans, or pease in a day, &c. And therefore a tasker will do no other business than thrash, except it be to give cows straw night and morning in the farm yard, to mow at hay-time, and to reap and mow at harvest.

A Shepherd.

This is accounted as useful a servant as any the farmer has; and who, accordingly, gives him near, if not quite, as much wages as the ploughman, if he is to have the care of a large flock of sheep; for on his care very much depends the lives of these most serviceable creatures, by his preventing their rotting in his good management of them, and their damaging green corn, grasses, and other vegetables; for sometimes a shepherd, in common fields especially, is obliged to let his flock graze close to the sides of standing green corn, and turnips, &c. which the sheep are very prone to break into; and then if he is not a very diligent, vigilant servant, he may bring his master under a great damage. A lame shepherd and a lazy dog are said to be the best attendants on a flock of sheep, because these cannot very readily prejudice their bodies by hard driving them,

them, or running them about, as too many of the ignorant sort do, and thereby occasion the breed of the scab, red-water, leanness, and other maladies. A shepherd seldom does any thing else, besides folding his sheep every night, when the weather permits, unless it be at a sheering time; and then, if he can shear, he must be one of the number; if he cannot, he must wait upon the shearers, and wind up the wool in fleeces. If the farmer will have him work in hay and corn-harvest, he must hire one in his room to look after his sheep. And now, as I am writing on the business of a shepherd, I must observe that, in my travels, I verily believe, among the many shepherds I discoursed with, I hardly met with one in ten of them, that knew his business tolerably well: though, I must own, that, in the *West* country, I met with the most acute of all others; for here they keep the largest flocks, I believe, of any in *England*, and yet their land, for the most part, is a bad soil, and naturally very poor: but, by the help of their great number of sheep, they so enrich it, that it produces surprising big crops of corn and grasses. A compleat shepherd ought to be master of several sorts of medicines ready at hand, or, at least, to know how to make them, in order to save hove-sheep, griped-sheep, sheep poisoned by licking up the glow-worm, sheep overcome by a plethory of blood, sheep inclining

to the rot, scabby-sheep, sheep seized with the foot-rot, foreness of head, with ticks, or sheep-lice, or with other incident distempers; for, by these, thousands of sheep are sometimes lost in one year, partly for want of that skill which is perfectly necessary for applying proper and timely medicines.

The odd Man.

This servant follows next, as being the most inferior of all others, except the horse-keeper. He is kept by most great farmers in the vale and *Cbiltern* countries, and so extensive is this man's business, that it may be justly said of him, as it is commonly said of women, their work is never done; because some of those he waits on are always in want of something or other. The master, mistress, and maid, he is obliged to wait on, and assist upon occasion; but the maid-servant, in particular, he must supply with wood, or other fuel, fetch her water, heat her oven, help in milking the cows, churning her butter, and making of cheese. He serves the cows with meat, suckles calves, feeds the hogs, runs of errands, and is at the beck, not only of the master and mistress, but of all their servants, on necessary occasions. At hay-time, he mows, or else makes hay; at harvest, he acts in the number of reapers, and

does all other business in his power ; for which this useful servant has, commonly, from four to six pounds a year, in our country, as being the most confined of all others ; because he can, the least of all others, be spared from home ; and because he does as much, or more work, than any other servant belonging to the farmer.

The Horse-keeper.

This is the last servant I have here to write on ; whose business is, according to his title, to look after the horses, by feeding, currying, and harnessing them ; to keep the stable clean, to drive plough as often as it is used, and to accompany the ploughman at almost all business he does. At hay-time, he either mows, or makes hay. At harvest, he follows next the plough-man or lord, if he is able to keep up with the company at reaping. A diligent farmer thinks an hour's time in a morning, for doing of business, is worth two in an afternoon ; and therefore in spring and throughout all the summer, he, by ringing a bell or call, alarms his ploughman, and the ploughman his horsekeeper, who lies with him, and makes him turn out of bed every morning at four of the clock, to bait his plough-horses, for two hours. At five the ploughman rises, to help

harness the horses ; and then while they are feeding, both go to breakfast ; and at the same hour of five the master is up, to see these and other things performed in due order, and his team set out to plough at six a clock ; for, according to the common and true saying, *The Eye of the Master makes the Horse fat* ; And observe, that they continue eight hours work in the field, before they shut out ; so that it is about two a clock, before they return to the stable.

B O O K XXII.

Of T I M B E R.

C H A P. I.

O F T H E O A K.

THE oak, of all other trees, claims the priority of regard in this nation for its many transcendent uses; but above all for ship building, which, indeed, are the walls and chief fortifications of this kingdom. And however remiss and indolent we have been of late years in cutting down and not planting again, this most excellent timber, as may be seen in *Wing* park, and many other places, with an eye of pity; yet of late, through (I presume) the several printed items, published by men under a concern for their country's good, some of our discerning, able men have received such convictions, as have provoked them to sow and set acorns, or plant young oaks in many acres of ground. A singular

lar example of which, in these parts, is the most noble duke of *Bridgewater*, who is certainly one of the greatest conservators of wood in this kingdom.

The oak agrees with almost all sorts of soils, but grows best in the richest grounds, and is the longest lived tree of all others; yet is its date determined shorter or longer, as the nature of the earth wherein it grows: in clays it is more tedious, as its roots obtain their food with more difficulty; but then its wood is more serviceable.

In sandy, chalky, or gravelly grounds, they grow much sooner, from the light, loose texture of these earths, that gives an easy progress to the oak's roots, which brings on its maturity sooner than the stiff, cold clays will, and therefore they are never so large in this loose soil, as in the more close; but then its grain is clearer and smoother. This tree obtains a firmer footing in the ground generally than any else; for it is rarely found that an oak is without a deep tap root; this in a rich soil has been known in thirty years to get a foot diameter in body, and when it is arrived to this bulk, it then thrives much faster, by reason of its larger body and head, which now is capable of being shaken by the high winds, that strains its roots and let in the benefits of the several sorts of weather; and therefore it is a sort
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of rapine to destroy such young thriving trees, that get at thirty or forty years of age, more in one year, than they did when younger in several; especially if at first they took root towards the top of the ground; for, in my observations, I seldom ever saw a thriving oak, whose roots in the beginning took deep in the earth; and therefore I think myself more than ordinarily obliged to enter a caveat in this place, against the fatal, but too common, practice of planting, sowing, and setting too deep, which surely retard the oak's growth, and hinder its magnitude: whereas this, above all other trees, ought to enjoy all the propitious benefits that can be given it, on account at best, of its tedious growth, before it is rightly fit for ship or other buildings.

I have two sorts of oaks growing in my grounds, which I call the short spreading oak, and the tall, upright, taper oak, both which grow very well, if planted at first high enough, whereby their roots may be obliged to seek their food from the top and best part of the ground: and here, if any are so curious to prefer plantations of one sort before the other, it is only sowing or setting the largest acorns of the different trees; or if there are walks or rows to be made of them, the distance in this respect must be allowed accordingly; for the spread oak requires as well fifty or sixty foot asunder, as the other forty or fifty;

fifty; and this distance will very well admit of the growth of underwood, that may be felled at every twelve years end to great profit, especially if it be fallow or ash; these two being the most advantageous of all others for their quick growth, and the many uses their straight poles may be converted to, as hereafter I shall observe when I write of underwood: or if the fallow alone is planted altogether with the oak, it will be found most agreeable, because this root runs not very deep nor broad, which will give leave to the oak to make his slow pace with little interruption from the quick growth of this most profitable underwood: and therefore it is, that neither beech, elm, or any other standard tree, should be permitted to grow in company with the oak, because of the great prejudice that may in time ensue from their quicker mounting into the air; and then it is likely the oak will suffer in its low head, by the drip of their taller ones; which majority, wherever it happens, they will be sure to maintain, from the greatest advantages they enjoy, by the sun, air, rain, and dews, that ever will be most propitious to the highest trees, by the free and uninterrupted extension they meet with, to receive the sun's attraction and nourishing heats on all sides of their spreading heads: that then will cause them to perspire, and sweat out their crude and noxious juices in the day
time,

time, which they imbibe and drink in by nights, through the many pores of their spungy barks, leaves, and fruit; and it is thereby that trees subsist in a true regimen of health and prosperity, while the low headed, underling one, grows mossy, scabby, knotty, and stunted, for want of a free enjoyment of those salubrious benefits. And this grand conveniency not only belongs to the oak, but, indeed, all sorts of trees whatsoever: and it is here that the vegetable is obliged to receive and take in by nights and foggy days, those pestiferous and insidious particles of the air, which are great enemies of their life, and would likely end in their destruction, were it not for a due evacuation of the same, by a free perspiration through the several parts of their different bodies, by the sun's most powerful influences; that by degrees brings on such a rarefaction of the sap and juices, as to cause them vigorously to discharge their phlegmatick crudities, that the tree alternately receives.

In order then to raise great numbers of oaks in the best manner, I shall observe, that in a plentiful mast year, due care should be taken, about the beginning of *November*, or sooner, to collect and get the largest and soundest acorns (for the biggest of all seeds are best) when they fall from the tree through ripeness, for the full maturity of them is a main thing; when enough
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are gathered, the disposal of them is next to be considered. If conveniency allows them to be sown at the best time of all, they ought to be got into the ground as soon as possible, upon the finest and well dressed mellow ground, that has been under a preparation for this purpose, the whole summer, if not the winter too before.

Various are the ways that have been practised in this work, according to the ground and different opinions of men; but as I take it to be my business at present, if I can, to shew the cheapest and most profitable way to obtain a wood of oak; I shall therefore begin with sowing acorns in broad lands on this hollow earth. Let the land be ploughed into very small thoroughs immediately before the sowing of the acorns; then take two bushel of them, and sow out of a seed cot, by the broad cast of the hand, then harrow them in at discretion: this quantity, if they take, will more than furnish an acre of ground; but here is allowance given for incidents from fowls and mice. From this management, perhaps, there will arise an objection, that this large bodied seed will not be haled or covered, because in broad lands there is not a sufficient hollowness of ground to cover their bodies from the injuries of weather, fowls, and mice. To this I answer, that there is depth enough between the thoroughs to envelop and cover most of them, by means of the harrow tynes,

tynes, infomuch, that if those or the greatest part of them grow that are covered, there will be a sufficient number to stock the ground, if the rest were all carried off; but that danger is not so great, if we consider that in a plentiful year of mast, and at that season of *October* or *November*, there is full provision for birds and mice; not only from this mast of oak, but from the many corn fields that then abound with great store of scattered grain from the preceding harvest, which by consequence will divert their search and quest after these; and if a fowling-piece is employed a little, the danger will be the less, for the loose ground will readily receive and draw in the acorn, and then the hazard is mostly over, from these sort of enemies, and also from the weather, because the radicle having taken the ground before the severities of the winter, it will thereby be enabled to maintain itself from winter to winter, till it becomes a sturdy oak.

The next thing is to have a strong fence, that no sort of cattle may possibly break in; and then there is no more to be done, but to leave this sowed ground to providence, and there is no fear of the best and cheapest of woods.

This way of sowing the acorns and harrowing them in, is surely the nearest of all others to that of nature; which always receives upon, and nourishes

rishes the seed from the very surface of the ground, as being the richest part of all the earth, is nearest, and more ready to take in those benefits that the sun, air, rain, and dews communicate, which are the very vital parts and nurseries of the young oaks; and therefore the more they enjoy of these nutritious influences, the faster they grow: and this is the true reason that those numberless objects that present themselves to travellers eyes, who will but employ them in the views of the deep and wrong planted bodies of trees, are longer growing, and so become set and stunted in less than half their time, as may appear by the knotty, mossy bodies and brousy head of oaks, ashes, and beeches, &c. and that in some of my own fields, which was caused at first, I suppose, by their being too deep planted, that obliged their root to make their way into, and seek their food amongst the red clays, that lie about two foot lower than the surface; while several others, that are planted high and near them, flourish and grow in clean upright bodies and thriving heads: this has brought on necessitous consequences, that has obliged many owners of such trees to cut them down in this their stunted condition at less than half age, which is the time that a well planted tree runs and grows more in one year than formerly in several, as I said before; by which may plainly appear the great value, moment,

ment, and importance of high sowing and setting at first the seeds and sets of these timber trees; because an error in the beginning is the worst of errors, as being most difficult to redress, and often irreparable; and, I think I may say that wherever a seed or set at first is put into the ground too deep, it will never make a good tree of any sort; therefore I shall add the following directions, viz. In case you are to improve a low, wetish, vale ground, by raising an oaken wood on the same, then with a foot or swing plough raise the land up to lie in half acres, whole acres, in six, or in eight thoroughed lands, as your fancy leads you, and proceed thus. If it is a sward, grassy ground, it must be first ploughed into broad lands for the turf to lie and rot from *Michaelmas* to *Lady-day*: in *April* ridge it up, in *June* harrow and lay on your rotten dung, virgin mould, marle, fowl dung, or other good dressing, for the soil cannot be too rich for this purpose: then plough it directly in the same way the last was done, that it may lie, mix, and incorporate with the earth against your season, which is to be at *Allballontide*, the acorns then being fit to gather full ripe by the hand; for these sort of large seeds must not be beat off the trees, as many ignorant people do, and so hinder the tree from bearing some years after, and also damage the fruit to that degree, by the blow and

fall, as either to hinder their taking root, or else to cause a half grown dwindling oak. Now the last ploughing you are to perform, is to be done by casting down, or beginning first at the out-sides of the land. But just before you thus plough, you may sow one or two bushels of acorns all over the half-acre land broad-cast, and plough them in under thorough, for this soil generally shatters on a frost, and will easily let out the young spires: When this is done, your work is over till you inclose it from cattle, for in this management you need not weed at all, but let the grass grow as fast as it will: the reasons for which I shall hereafter shew.

But in the chiltern or hilly grounds the case must be altered; for to bring such into a fine tilth, you are first to plough it into broad lands at *Allballontide* with the fallow wheel plough, which let lie till *Lady-day* following; for by that time the ground will get rotten; then harrow it plain, and directly lay on your rotten dung, or hending, horn-shavings, hoofs, or rags, or coney-clippings, or sheeps-trotters, or soap-ashes, and immediately bout the land across with the fallow wheel plough: thus let it remain till *Midsummer*, when it must be bouted again a second time. At *Michaelmas* back-bout the ground down, and at *Allballontide* harrow it plain: then take those acorns that have fallen down of themselves through

through ripeness on a soft ground, or gathered ones, and sow broad-cast three or four bushels on one acre, and plough them in very shallow under thorough; for these seeds are rather too large to be harrowed in, unless they be sowed on a tough ground, and on a tough tilth. By these two methods the acorns are secured from the beaks and claws of fowls: and if you have a mind they should be so from mice and worms, in *January* following slack forty bushels of stone lime on one acre, and sow it out of the seed cot broad-cast all over the ground; or, twenty bushels of soot on an acre, and it will drive down the worm, and discourage the mice: also by the several ploughings and harrowings the ground is got into so fine a tilth that there will be no danger of burying the acorns; because the earth will be so loose as easily to let out their spires; for the bigger the seed the sooner it buries in a stiff clotty earth; witness the horse-beans, that in red clays are often lost by reason their broad heads cannot make their way out: but when they take to grow well here, you may afterwards draw out what underling plants you please, and only leave the master thriving one, which will thus make a cleaner, straighter, and taller tree by this its spontaneous growth from their natural tap and other roots, than any transplanted one whatsoever.

The sap of trees stirs at three seasons of the year; in *April*, at *Midsummer*, and at *Autumn*: at the two first the bark will peel, but it will not between these times. As it lies in all parts of the tree all the winter, at *Spring* it makes shoots, leaves, and blossoms; at *Midsummer* it makes fruit; and in *Autumn* another small shoot. To prove the sap is always in the tree, an oak was cut down in winter, and next *April* the sap was so fluid in it, that it was peeled as easy as others just felled, though it was cut in several pieces as it lay on the open ground.

A second way of doing it may be done by planting the acorn at every forty foot distance, in rows or otherwise. Make a hole of three or four foot diameter, and a foot or two deep; lay the earth about the edge of the same in small parcels, the beginning of winter, for the frosts to shoal and sweeten against the spring: or, if you are to plant these holes at *Allballontide*, then they must be prepared accordingly before; so that either then, or at spring, they may be a fine tilth and loose order; and when so, thrust three, six, or nine acorns, in the circumference of each hole, about half a finger's depth, which by the next year will be up, and then may be drawn all that are superfluous, and only the master-shoot left; at this rate there will be twenty-seven oaks left in a square acre of ground, at one in each hole:
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after this the ground about the young tree must be carefully houghed several times a year, for ten or twenty years, and fences made about each oak.

This way will certainly do very well; but the excessive charge that attends the yearly management of the oak for some years, is seemingly to me a little discouraging, though in process of time, I believe, it will pay a man in proportion to fifteen or twenty shillings each oak at twenty years end, provided their side-shoots are duly trimmed, and underwood not planted amongst them till six or eight years be past, lest it get up and top the young oaks, to their great prejudice.

This way has this advantage, that the roots of the acorns have wider and looser room to run into than the former; and therefore, I must needs say, it is an excellent method; because the hollowness, fineness, and sweetness of any earth, contribute greatly to the quick growth of any vegetable therein planted; and were it possible always to keep their roots growing in such a loose mould, an oak, or any other tree, would certainly attain its full bulk in half the usual time it does: this I have in proportion seen experienced by a tree's growth, that was set in a pit or hole of loose earth of a large extension, which out-run all the trees in quickness of shoot that

ever I saw: here the acorn may be set as shallow as a person thinks fit, and the ground about them, for twenty years together, houghed and always kept clean from the tyranny of choaking weeds: and here, as the tree grows up, should a person annually observe to rub the body with a hair cloth, or back of a knife; the first application to be made use of in dry weather, the latter in wet, which will dilate its bark, and open its pores for readier receiving the sun's warmth, and the rain's moisture, that will feed and assist a tree more than is generally thought of: it is this that keeps off that grand enemy the moss, which will inevitably overtake all oaks little or more that want this sort of husbandry.

These holes may be made in rows to answer both ways of the field, that the plough may thereby have room to pass and repass the cross and long ways of this ground the better, and for the great conveniency of ploughing and sowing any sort of grain, or grass seeds on the same for the first ten years of this plantation, till the oaks have got good roots, and their heads high enough in the air as to be out of cattles reach. But then here may arise an objection, that the young oaks will surely suffer, if not ruined, by the horse, cow, and sheep, that may be turned into this ground to feed, if the oaks be not fenced in. To this I answer, that to avoid the great expence
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of cooping and fencing each tree, I would turn no cattle into this ground, but supply it another way; and that is, if grain is on it, then as soon as it is got off, plough it up, and sow it in the next spring with more grain or grass; if the latter, then it may be let to grow, and mow two or three years successively, to the great enriching of the ground; if, again, corn is to follow that, it is only ploughing the land into a fine tilth, and dress it with dung or other manure; and so likewise for the seeds or sets of underwood that is to grow thereon, and furnish this field for ever after.

Here, therefore, by a right management, the charge of fencing the young oaks about may be saved, and the ground altogether as well enjoyed to profit; but then, as a safeguard to both, there ought to be not only an outside hedge and ditch, but also a good railing within-side, by driving a large oaken stake at every five foot distance, and pinning or nailing thereto three or four rows of rails, about four inches deep each rail; this will be an effectual guard, with the help of a man's over-sight now and then, and a forbidding fence against those night encroachers and invaders of a man's property, who make it their business to take all advantages of a distant piece of ground, so planted and sowed with acorns, and have spoiled several acres by their horse and sheep biting

the leading shoots before the first seven years was over, for the lucre of the grass that grows between the young trees. But if a fence or coop was at first set about each hole, that would not secure the underwood from the damage of cattle, which afterwards is to grow between them: whereas this inside railing round the field at first, will last twenty years, and thoroughly secure both the oaks, corn, grass, and underwood, from all hurt of beasts, and greatly from the rapine of thieves.

This method of planting acorns in holes, is not altogether confined to a year, or half a year's preparation of the ground, but may be done on a sudden: for, suppose I had a mind to get a wood of oak, ash, or beech, on a wheat or other stubble or meadow ground; then at *All-ballontide*, or at spring, I would dig my holes at forty foot distance, and at the same time bring as much virgin mould to the place as is necessary, and carry as much to fill up its vacancy, which is only an exchange, but greatly to our purpose in forwarding the oak's growth; or else I would mix foot, rabbits dung, or fowls dung, &c. with the natural earth that comes out of the holes, and put it in again. If grass ground, the turf must lie at bottom. In this I would plant my acorns directly; the rest of the ground may be ploughed and sowed according to discretion, with corn or
grass,

grafs, as I have before hinted. By this no time is loft, and all the encouragement that can well be given, is here made use of. Here is saved that great charge and trouble of summer waterings, that a planted acorn does not require. Here is saved the fatiguing, hazardous work of transplanting : and here is a tree to come up, that will be stronger in the ground, and grow faster than any set whatsoever.

If the oak is to grow in parks or other places, where the herbage is to be fed by deer or other cattle, then sixty or seventy foot is but due distance for the growth of such tree and grafs ; and by how much they are planted asunder, the more the oak enjoys a free air, circulation of its sap, and perspiration of its worser part, which is always more promoted and furthered in its head, if the side-shoots are constantly pinched or pulled off, and the ground once a year digged about the oaks roots at every *Michaelmas*, and afterwards kept dished in a bowl-like manner for the better receiving the nutritious rains.

Thus an acre of ground, worth but five or ten shillings an acre a year, may be improved to near, if not quite, twenty, with a trifling charge, which too plainly discovers the indolence of many able owners who are wanting in doing themselves and the nation this great and good service.

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I have forbore to set down particular calculations of the several charges and expences of railing and fencing in the holes and field, because that is obvious to every farmer, and is of greater or lesser amount, according to a person's convenience of having wood and servants of his own; or as that part of the country, where the operation is performed, is nearer or further off from *London*.

A third way is, when by several ploughings and a good dressing, the earth is got into good order, and lies in broad lands, to sow the acorns half under thorough, and half on the surface, as we often do pease and horse beans: at first the man sows half the seed all over the piece of ground, and ploughs them in as shallow as possible; when that is done, he sows the other half over the same ground, and harrows them in; this secures one half, however, from the fowls and weather: but this according to the mind of each person; for my part, I am for following the steps of nature as close as I can, and I think I cannot copy her more nearly than harrowing in the acorns as I have said before, that they may grow from the very top of the earth, as all do that fall from trees, or are dropt and left by fowls or mice; as it also is, with the great numbers of cherry-trees that grow in our woods, occasioned by

by the stones that the fowls drop from their beaks and bodies.

I confess that where the ground is a true loam, and that ploughed into a fine hollow tilth, and that again furthered by cart rotten dungs, the acorn here may speed very well; but without this management, I think it is but mal-practice, and will greatly endanger burying the acorns; as I knew it once done some years ago, by a man's following the plough, and straining in the acorns every second thorough of a wheat sitch, that was thus ploughed down into broad lands, which absolutely buried the acorns, and the owner lost both his hopes and profit by so doing; because the earth was heavy and clung for want of several ploughings that should have preceded the sowing of the acorns; and also for want of its being well dunged, that would have put the ground into good heart, and kept it hollow for the free and easy spouting of the seed.

A fourth way is, if opportunity does not answer a person's inclination of sowing the acorn as soon as ripe; or that the ground is too wet, and low for venturing them at that time of the year; then the owner may lay them in dry sand upon a layer of that, then a layer of acorns, and so on in a tub, barrel, or room, which will stop the acorn's growth, and make it fit for sowing in *February* or *March*, in a true fine tilth and well dressed

dressed ground. In this case, a method ought to be adapted to the nature of the soil and situation of the place; and therefore on such a wet, low earth, broad lands are very improper to sow the acorn in, because the wets would chill and stunt the young oaks, and hinder them from ever attaining a proper bulk and stature: for which reason, when the ground is in true order, and in broad lands, either with the foot or wheel plough, make a fitch or ridge at a bout, and strain in the acorns by a man's hand in two thoroughgs a little distance in the fitch; then run the plough between, which will make a hollow or henting that covers and fills in both the thoroughgs at once; and so on after this way throughout the field; leaving between each fitch or ridge three, six, or more feet of whole ground that is not to be meddled with. This high sowing on a fitch will very much contribute to the preservation of the acorn, against the damage of wets and chills, that in many grounds is the bane of all things that grow therein.

As the acorns are sown in fitches, or ridges, at no greater distance than what is necessary for the spread of the oaks roots, there should nothing else be suffered to grow but them; and this may be done by the interspaces being kept clean with houghs, and then the young trees will have a great advantage by this high sowing; because many of their roots will run almost level with
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the ground, and be better watered by the rain's descension from the top and sides of the stiches; so that here will be nothing more to do, than looking after their bodies and keeping them from moss, the growth of side-shoots, and thinning them where they are too thick. I have planted several apple trees in my orchard in stiches, that by this means grow as fast again as those in the levels. At *Leyburn* in the vale, I have also seen a fine apple orchard, that because the ground was flat and wettish, they planted the trees on high ridges made by the foot plough, by ridging up four or six foot broad of earth. So likewise either in the vale or chiltern may oaken sets be planted on these ridges, alone, or with fallow sets or cuttings, &c. But here I must further observe, that in laying by acorns all the winter to sow in the spring, some will judiciously spread them all over a boarded floor, in a thin manner, in order to keep them from heating and sprouting, and is what will do very well if preserved from the frost, which is another enemy to this seed. I knew an ignorant person once keep acorns all the cold season in a heap in a chamber, and so spoiled many of them and damaged the plantation of oaks which grew from the rest, few of the acorns having escaped a bruise, or spring in some degree before they were sown: but what added to this misfortune, the ground, which was
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a loamy gravel in the chiltern country, had but one ploughing allowed it off a stubble, and then the acorns were ploughed in so deep that many never came through, and those that did, at twenty years growth, were scraggy, stunted, poor, small oaks, leaving besides the ground at least half treeless.

Oak peeled as it stands, and remaining so two or three years, hardens the sap almost like unto heart.

An oak felled in winter, and another in *April*, the first rotted when the last was found.

Right *English* oak makes a cask that will last as long again as that of *Norway*: *Norway* oak is commonly so porous, that if you put some spittle at the end of a stave a foot or more long, and blow at the contrary end, it will sputter like a piece of cane, if the grain runs straight, and there is no knot between. But sound *English* oak, cut down at a right age from a good soil, is generally of too close parts to admit of such a proof.

An oaken thrashing floor was laid half with planks soaked in black pond water, and the other half with unsoaked planks; at fourteen years end the first was found, when the last was rotten at the bottom side.

Oaks made pollards, is quite wrong; for while its slow shoots are growing, the body of the
the

the tree is rotting. Oak will grow better in wet than dry ground. I have heard of a transplanted one in a moist soil pay 8 l. at fifty years growth.

At *Potten-End*, about two miles from me, (I am told by a person now living that saw it) there was, about forty years ago, half an acre of land sowed with most sorts of seeds of wood, that the owner could get, amongst which were hazel nuts; these invited the boys as carefully to carry them off, as he brought them on; which accident so instamped the transaction on the memory of those that were the gatherers of the nuts at that time, as caused them to remember the matter (as they say) truly well. And there is now on the same piece of ground, good oaks, beech, ash, &c. that grow very well from the person's harrowing all the seeds in, which as soon as done, he sowed hens dung all over the same, that by the winter rains was washed in before the next summer: this method was attended with great success, for the fowl dung made the seeds push up and run vigorously, so that they overcame the weeds and made their progress, without their hindrance.

This way is full sowing and full dressing at one and the same time, which admits of no other improvement than cleaning, fencing in, pulling

ing off the lateral shoots as they appear, and thinning where they are too thick.

There is in my neighbourhood a man that the farmers in general allow to understand country affairs very well, and is often employed in wood work, who says, that if a piece of ground is designed for a wood of oak, there is not (in his opinion) a better way to obtain it, than to plough, dung, and let it run over with wild grass and weeds, which it will do in one summer, and at the end thereof, about *Allballontide* or sooner, to sow four bushel of acorns, or more, broad-cast, on each acre thereof; and do nothing more than fence in the ground from damage of cattle, to have a wood the quickest and in the best manner of all others — his reasons for so doing are these, viz.

First, This grass and weeds, by its large burthen, will cause a great hollownes on the surface of the ground, which by its dying on the same, becomes one of the best manures, not only by helping to keep in the spirit of the earth, which all shades certainly contribute to, but returns saline, nitrous, and sulphurous qualities back again, by the dung and dressing this rotted fogg makes, and thereby brings the ground under a gradual fermentation, and hollow, spungy texture of parts, as is most evidently felt by the soft, hollow tread of one's foot in woody grounds; or
where

where a good crop of pease, or other flower in great quantities has been taken off.

Secondly, That this and all ground has such a fruction and attraction inherent to its nature (as being the mother of all things) as will eagerly draw all sorts of seeds into its surface; and therefore it is that the earth freely receives and shelters the acorn, so that it will lie in this loose mellow, moist, warm earth; and by next summer grow with great vigour, and be defended from the damage of drought by the cover of this grass and fogg; which by yearly consuming on the ground, becomes a yearly dressing to the young oaks, and will push them on with great fertility.

I cannot say, but this way has a probability of success attending it, by reason it is so near that of nature; for in a four acre meadow of my own, adjoining to my house, there were reckoned by the mowers to be two hundred young oaks, about six inches long, that spontaneously grew up from the acorns that were brought there by the greatest artists in the world, the fowls and mice; who made this piece of ground their rendezvous to feed on the acorns, that they collected and brought from the adjacent woods. My number are fifteen inclosed fields, consisting of meadows and ploughed grounds, nine others I rent of our parson: now in all the ploughed and mea-

dow fields, I believe I may say, there were growing this summer, 1732, great numbers of young oaks from the acorns that birds and mice brought on the ground, from trees that the year before were almost full of them; by which it appears, that the fowls and mice are the first bringers on, and sowers of the acorns in the meadows and ploughed grounds; because its body being a large solid, cannot be supposed to be scattered over such grounds by the wind; and why the meadow, or any other smooth ploughed ground should have a greater share of this seed, than the rough, clotty land, is easily accounted for: because here is smooth walking and easier access to each others company, which is agreeable to fowls as well as beasts; and here is the place that they are best acquainted with, from their usual frequenting at other times of the year, in quest of worms, snails, &c. which in the rough grounds cannot be so pleasant, because they there must look before they step, and so lose in a great measure their enjoyment in feeding on this delicious food, which they are always most pleased with, when they can eat it in an unobstructed piece of ground: here it is then that they scatter this seed, and sometimes leave it on the same by way of magazine, and provision against their next hunger; and sometimes they bring to these places branches of acorns which are not always eaten; at other times they are suddenly

denly scared and frightened from the spot of ground, which in their precipitated fright causes them to leave and forget the acorns, they lately brought, and that chiefly by the rook, crow, and jay: the rook upon this account is the busiest, and most common fowl of all others, by reason of their greater numbers; and it is disputed by some, whether they do not bring several acorns in that bag which generally hangs under the old one's throat, and disgorge them as pigeons do pease and beans at their pleasure: we are very sensible they bring worms and water in this bag, to feed their young ones with; and nothing but the bigness of the acorn makes us doubt their not doing so by this, in order to make their hoards at the bottom of a furze-bush, and other places, which the furze-men often find, as well as walnuts that the rooks thrust in with their beaks; by which means, are the many young oaks seen on commons, that are cut down when the furzens are, by the strokes of their two-handed long bills; for it often happens that a great deal of this seed is enveloped and covered by the moss and grass, that the hollow earth in ploughed grounds will readily and naturally receive, nourish, and cause the same to strike its radicle into it; where, at that time of the year, it has more than ordinary encouragement to grow, because the rains and dews are moderate, and the ground about *Mi-*

chaelmas time under a fertile, bearing state; and by thus getting root easily, it secures itself against the violence of the winter frosts and wets. It is common about *Marlow* in *Berkshire* for the boys to follow the rooks, to get the walnuts they bring and leave on the grounds there. Also in the grove meadows, a mile below *Ivinghoe*, a ploughman told me he had ploughed up great numbers of acorns and walnuts this summer, 1732, when he turned up the ant-hills with the long, wide, sharred-foot plough; these he concluded were brought thither by the rooks, who feed on them there for their greater safety and repose; and those that were left, were carried away by the mice, for their winter provision: for the rook is a subtle fowl, and will strip a walnut tree in a little time, and will hoard them, as knowing they will be soon deprived of that opportunity, by their being gathered; and so of the acorn, I have seen them rid a tree presently, by their great numbers.

Hence it is, that I infer, that a meadow or prepared ploughed ground, that lies at a small distance from a wood of oak, and in an undisturbed situation, may possibly have considerable numbers of young oaks grow on the same, besides what are produced by sowed acorns and planted sets, merely by the fowls bringing the acorns, and feeding on them there, in a plentiful
mass

maſt year. And if this field, or piece of ground, lies in reach of the wind's power, by which they may be conveyed from ſome neighbouring wood, hedges, or ſingle trees, then will there be as numerous an iſſue by aſhen keys, and gollins of fallows, aſps and white wood, as will quickly compleat this intended wood, and out-do the very next field that was ſowed or ſet too deep. But I would here be underſtood, that I am not a direct votary for any certain ſtreſs to be laid on this method of encreaſing a wood of oak, beech, aſh, fallow, &c. only to ſhew the poſſibility and probability of augmenting one by fowls, mice, and winds; for it may be depended on, that ſowing and planting the acorn and ſet, is much the ſurer way.

In ſome parts of *Hampſhire* I have been credibly informed, that it has been the practice of ſome, to plant a piece of ground with young oaken trees, as being thought to be the quickest way of all others to get a wood: but then this method is confined only to the power of thoſe who are owners of a wood already, or at leaſt but to few others; and then they dig and take up a young oak, perhaps of four, five, fix, or eight foot high, with ſuch a ball or parcel of earth, as when carefully carried and tranſplanted with the roots in it, and put into holes duly prepared before-hand, will grow, flouriſh, and come

to perfection much sooner than the small set or acorn; and by losing part, or all of its tap-root, will commence its new growth horizontally, and get its nourishment from the very best part of the ground, I mean the surface. And this work should be done in *October*, as the very best time in the whole year; or in frosty weather, by digging some time before about the young oak, and as soon as the earth is hard frozen about its roots, then take up the tree and that together, and carry it on a sledge, or other carriage, to the place designed, and stake or fence it up very well, as directed for the beech; thus an oaken wood may sooner than ordinary be brought into a state of perfection.

The latter end of *November*, 1732, was the first frost that happened this winter, when several fir trees, I believe twenty foot high, and eight inches diameter in body, were transplanted in this manner, on a common near me, with a beech at every ten foot distance between them, for covering the view of an old house that stood at the end of a vista: the turf was first pared off, and the under mould loosened; on this they planted the trees, and mounded them up with turf, they pared off about the place, which was sufficient with the earth they brought with the trees roots; putting, at the same time, wheat-straw between the layings of the turf, to keep the frosts off in winter,

winter, and the draught of the sun and air in summer; after this, they staked each tree with four poles, of about ten foot long.

Soundness.

It is certain, there is sometimes a greater difference between a sound, and what we call a shaken, or unsound tree, than there is between six-pence and eighteen-pence: that is, one of eighteen-pence a foot square, which is truly clear and sound, free from great and many knots, is better worth that money, than an unsound shaken tree is worth six-pence a foot. Now to know a shaken tree, you must have an eye on the outside of its body, and see if there be not a rib, long rising, jetting-out, or crack in some part of it; if there is, you may depend on it, that such tree is damnified or shaken: but to be more particular; there is a certain great wood computed to be several miles round, whose bottom is a red clay, below a shallow surface of hazel mould. In this wood grows a prodigious number of oak-trees, which are all, or most of them, shaken, little, or more, except a few, that grow on a gravelly small spot of it. For a proof of which, an ingenious workman at *Latb-Rending* declares, as he has for many years wrought on the oak wood that grew in this place, he never met with any,

but what was shaken, except, as I said, those which grew on the dry ground.

The reason of this is very obvious, if we consider, that a red clay holds water like a dish, which gives the roots of oaks a considerable opportunity of furnishing themselves with abundance of sap, for in such soil, and by the close standing of the trees, the ground is never dry; and for want of a free air and room for the buds, leaves, and shoots, to sweat, or perspire out, the superfluous sap or moisture, it is obliged to force its way out by cracks or rends that it makes in the body of the tree. Now it is such forcible bursting, that shakes or splinters the inside of the tree, to evacuate or discharge this superabundance of sap; and, when it has sufficiently expended it, it forms an excrescence, or long rib on the part, which is nature's healing or skinning the wound over, who is often its own and best doctor; yet not so close, but that the extra sap has commonly room for a free passage through a crack or rend, and undoubtedly serves for some time, as an issue or fontenal for making off such watery humour: hence it is that such defective trees may be discovered; and it is this that shews the great benefit a tree enjoys, when it grows in a dry soil, and has full room to receive the air, dews, and rains, at its roots, bark, leaves, and fruit, and return the overplus through
the

the innumerable ducts and pores of them; but most of all through the leaves, which are here much impeded by the close situation of the trees; and then it is that the top part of the tree is obliged to carry most or all of the leaves, for, by their close standing, the drip and shade of the upper arms perish the lower ones, which causes the tree to lodge so much sap, that for want of arms, shoots, leaves, and fruit, to discharge it, it makes an irruption to find a vent. Thus a sap or water-breach is made, and, by the veins or vessels of the tree, the sap or moisture issues to, and here runs off: so that such tree not only suffers by being thus rended and splintered, but its wood, for a considerable way about the part, is shattered and loosened, to the great damage of the owner, if it is discovered by the buyer, otherwise, the buyer lays out his money for what he has not, that is, sound timber. For as a carpenter said he had as lieve buy some hollow trees, as some shaken trees, because, if the hollow trees are but a little decayed in the middle, and the rest of their bodies sound, they are more valuable than the other, when much shaken or rended.

A tree may not only be shaken by a superabundance of its sap in the summer time, but also in winter. This disaster befel innumerable oaken trees in the long severe frosts that happened in 1739, by which they became rived,
shaken

shaken or split: for as ice has a more hollow body than water, and frosts have power over all fresh water and moisture they can come at; the sap of trees, though thickened and congealed in them, becomes swelled, and thereby rends and bursts the body of them in one or more places. Now the oak, of all other trees that grow in *England*, is most subject to this calamity, because it is more porous than most others. I have seen a cooper put some of his spittle on one end of a long stave, and blow at the other, to make a bubble, and it would do it like a cane, through the pores or veins contained in the wood; for notwithstanding it is the strongest and most durable wood of all our *English* sorts for building, yet is beech, ash, and elm, and several of a closer texture of parts than the oak, which causes it to be more subject to this piece of ruin than they, and especially when there is a great deal of sap in a juvenile oak, which on this account makes it liable to be so cracked and shaken, that a nice eye, sometimes, cannot perceive it while the oak is standing, because there may be several rended places that are almost imperceptible, even after the tree is fell, for the wound in time closes and skins over so well, as to deceive the spectator.

This redundancy of sap, which causes the shaking or rending of the oak, is certainly chiefly occasioned

occasioned from the moist or wet bottom whereon the tree grows; for here the roots imbibe so much aqueous nourishment, as fills the veins or pores of the tree till it bursts, as I said, into cracks, to evacuate and let it out, for the sap remains in all parts of the oak, even in winter, and is not received into its roots, as many ignorantly imagine: it is only there congealed, and, from a rarefied thin body in hot weather, changed into a thicker in cold; yet not so hard and densified, but that the cold freezes it into a thicker, harder, and larger body still, of such an icy nature, as to do the mischief I am writing of. A carpenter bought two oaks, as they stood, one for sixteen pounds, the other for ten shillings, which grew about four poles asunder. The little one he felled first, and found it shaken almost all over, which struck such a damp on his spirits as made him offer forty shilling to be rid of his bargain; but that would not do: however, some time after he felled the great one, and it proved as sound as any he ever had. The bark of these two trees he sold to a tanner for fifty shillings, and he at the charge of taking it off. Now why the young oak became shaken, and not the other, may be, because the bigger might stand on a drier soil than the lesser one. Nothing is more deceitful than standing trees, so various are their infirmities. A timber-tree is a merchant adventurer;

you

you shall never know what he is worth, till he is dead.

Lopping.

It is true, that the best way to prevent young shoots from growing out of any part of an oak's body, that the owner would not, is to prune them about *Midsummer*, which will give such a check to the sap, as to hinder their return for many years after. But if this is done in winter, they will soon grow again about the same place, as I have often proved. Yet this practice would be very ill performed at any time of the year, when arms are cut off of any bigness, because then the leading vessels to that part are got so large, as to give room for abundance of sap to flow to the place, and there issue out, to the very great damage of such tree. For as the sap to a tree is as blood to an animal, the other parts of the tree must suffer for want of sap, when too much is discharged by such large orifices. And if you was to stop the part with any oleaginous or plaistick matter, the misfortune would be increased; because for want of vent the sap must flow about the inside part of the wound, and there rot the wood. This is a sort of damage that has escaped the perception of many nice inspectors: As I shall by and by make appear, by examples in the chapter of the *Elm* and *Beech*, which I

doubt not, will be a sufficient warning to all my readers concerned in buying or selling of timber; the latter to prevent the misfortune, and the former to examine the tree well before buying, to avoid imposition, for there are bites in most professions; but fore-warned, fore-armed. However, in case there should be a necessity to lop off the large arms of oaks, cut them off within a foot of their body, rather more than less; for then, and if this operation is done in winter, it will cause some little twigs to shoot out about the part, and expend most of all the flowing sap in nourishing their growth, and thus save that irreparable damage, such injudicious management subjects a tree to.

Oak for Coopers.

A cooper, that had just rended a green oak into staves, had a large barrel-churn bespoke in haste, and, wanting wood to make it with that was seasoned by age, was advised by a lath-render, to boil the green staves in the hoop-copper, which is eight foot long, and two broad. In this he boiled his staves one hour, and they tintured the water almost black as ink; and, after he had gradually dried them two or three weeks, he worked them into a churn, and said they never swelled nor bulged afterwards, but lay as still as any he ever worked; for, when staves are boiled,
they

they will become very pliant, and twist almost like some leather. This brings to my memory the sight I had once at *Chatham-Dock*, in 1738, of their making thick oaken planks pliant, by steaming them several hours in a confined place, for their more commodious using of them about the sides of ships. But in my humble opinion, if they boiled them a little while, it would bring them to their bow much sooner, and with less trouble, than the common tedious way they now follow; but yet, with submission to their better skill, I must own they may be in the right, on account of keeping in some part of the sap this way, and yet make the plank pliant too; for which reason, I suppose, this method was invented. But this is not all, for by capt. *Cumberland's* late way (who had three hundred a year allowed him for life, for his invention) the sand, that the planks were heated in to sweat and make them pliant, stuck so close to the wood, that, when cold, spoiled many of the carpenters tools in working them, which this way does not. If you boil oaken planks, pails, or hoops, in three several waters, the first will be entirely black, the next less, and the third almost clear, which shews all the sap to be out. Another cooper, at *Cheesham* in *Bucks*, complaining he had nothing but green *English* oaken staves to work on, that hindered his getting his bread at present; a wiser

man than himself hearing it, bid him throw his staves into the river. The cooper answered, they would be carried away by the stream, or stole: Oh, says the other, I will tell you a way to prevent that; take a large cask, with only one of its heads in, and fill it with such staves; then pour in as much water as the cask will hold: at two days end, draw off the water, and put in fresh to stand two days longer; then, as soon as the staves are taken out, put them in the air to dry, and make use of them; which he did, and they answered as well as any that had been dried a year together. But, for a wager, I have heard a cooper say, he would, by boiling green staves, half an hour at a time in only two waters, work them at a fortnight's end: in winter by drying them after bread in an oven, and in summer by the sun, and should answer as well as the oldest wood.

Oak for Wheelers.

A wheeler took out some old spokes that had been in a wheel near forty years, and though most of them had a mixture of sap and heart, yet the sap seemed harder than the heart part, and so good, that he made use of them again as standards, to support the sides of a new cart. Now it is very likely, that these sappy spokes had a regular drying and age before they were used; or were first soaked, to get out the sap; which, in my

my humble opinion, is a surer way than that of stripping a standard oak of its bark, and afterwards to let it remain erect for two years in the ground, in order to harden its sappy part, and make it last as long as the heart. It is the opinion of some, that those oaks, that grow close in woods, have a softer wood, than those trees that grow alone, because such a one is exposed to all winds. Two oaks that grew almost close together, one was fit for building, and the other for shop use; because, that oak which grew on the north side was very hard, when the other which grew on the south side was very tender.

Oak for Laths.

If oaken sap laths are made use of before they are bound in bundles, and set out in the weather for about a year, they will rot presently; but, if served so, they will last more than a hundred years, as has been experienced. However, if you are in want, and cannot get such seasoned laths, then if you will soak such sappy ones an hour or two in cold water, and then dry them regularly, the sap will be got out, else in three or four years they will begin to rot a cieling, by the worms feeding on, and eating them up. For proof of what I write, a parcel of oaken sap laths was kept in bundles in an upright posture in a damp ground-room, where the air and rain could not come at them for a whole year, and,

at the year's end, the worms had bred and eaten a great many of them into powder : which should be a warning to all concerned in building, to be careful in the choice of their laths, lest they be at the expence of making a new cieling in less than seven years.

Using green oak is often done in many shapcs with the sap in the wood, though very prejudicial to the buyer's interest, whether it be in boards or thick timber ; but most of all, when such green wood is painted over, a piece of ill husbandry, that very many are ignorant of ! and therefore are imposed on oftentimes by a crafty knavish carpenter, joiner, or other tradesmen, who make this maxim their standard rule, that the strength of the work is the decay of the trade. On this account I advise my reader to remember, that if green timber, plank, board, rails or pales be painted, and the sap has not been washed or dried, and deadened out by time, it will rot in a few years : for take but a board sawed out of a green oak-tree, or out of one that has been lately felled, and though such board is all heart of oak, it will rot in seven years time, if painted all over in that condition ; for paint keeps the sap in, and hinders its drying out. So in a piece of timber that is served thus, as many are for sign-posts, and their cross beams, and a hundred other things, I say, these will rot in a little time :

whereas, if such heart of oak had been soaked a due time (or regularly painted) and then dried, it might last fifty or an hundred years, or more; for it is the notion of most workmen, that the worm will never breed in such heart of oak, but that it decays through meer age, which causes it to moulder away little by little. A gentleman's pair of great gates, made with wooden frames, and iron bars in them, rotted at twenty years end, by reason the wood was greenish, and the sap not thoroughly dried or washed out: for though the frame part was six inches broad, and three thick, yet, by painting the wood in this unseasoned condition, it was all rotted in so little a time, though made of heart of oak. If a man sits any time on a new peeled oak, it will give him a looseness.

Posts, burnt at their Ground-ends, to last long, do last the less while.

This new way of burning the grounds-ends of posts was, at first, thought to be very advantageous, and therefore in such common use, that I know two gentlemens parks inclosed by them; but experience shews, this method does not answer its end, because the vehemency of the fire makes several cracks and rents in the bottom of the posts, which lets in the water, and causes a swift rot, for nothing rots even heart of oak sooner, than by letting it become sometimes wet and sometimes

sometimes dry, for these posts were many of them rotted in two, at twenty years end. I suppose this way would be most excellent, if the fire could have so much power of the wood, as to penetrate it; but in these park-posts, it was only done in part, and therefore they did not last so long as they would have done, had they not been burnt at all.

Seasoned Oak.

Saw oak out as soon as peeled, before the sun cracks it, whether it be in planks, boards, or other shape. Throw them into a river, pond, or ditch, and let them lie all over in the same two weeks together, and the water will soak or wash out the sap contained in them. And if the heart-part has a sappy one to it, this washing, and a gradual drying afterwards, will make such sappy wood as hard almost as *Brazil* wood. Or in case you are not willing to soak the plank, board or timber in water, you may make them much more durable, by only letting their ends stand on the cross-bar of a chimney for three or four days or a week, and the smoke will ascend about all their bodies, and so dry and impregnate the whole wood with a smoky footy quality, as to prevent the worm and weather's damage to a great degree, both in heart and sap. But the

best way of all others, is to soak them first, and then dry them in the chimney, for this will make the sap-part last as long as the heart-part, for the worm will never breed in such wood; and though the boards, planks, or timber may be warped, by the continual heat of the fire and smoke, yet, if when they be taken down, they be instantly laid under a sufficient weight, they will soon be brought into their first shape: but you may expect to see them of a blackish dirty colour, like *Brasil*, and which will give a workman an opportunity to smooth their outsides into a fine black polish, and, by the whole management, cause such wood to last an incredible time. And thus, I hope, this new discovery of mine will in time come into general practice, and be a sure means for us to enjoy oak, beech, ash, and many other woods, in the most lasting manner.

Preserving Oak.

For preserving timber, the *Venetians* scorch it in a flaming fire, continually turning it round with an engine, till it has a hard, black, crusty coat, and so it is brought to such a hardness and dryness, that neither earth nor water can penetrate it. A certain person said he has seen charcoal, that, in probability, has been covered with earth above fifteen hundred years. Timber, that

is cleft or rended, is not so apt to rise and cleave as that which is hewn, nor squared as round. To prevent cracking or rising, some rub with a wax cloth, or paint, or rub it over with cow-dung, which will prevent the effects of the sun and air upon it, if it is to lie exposed. But, for closing the clefts and chops of green wood, anoint and supple it with the fat of powdered beef-broth, used with a sponge, and done twice over. Some carpenters use grease and saw-dust mingled; but the first is so good, that wind shook timber has been so exquisitely closed, as not to discern the defects; but it must be used on green timber. The *Hollanders* coat their timber that is exposed to the sun, with a mixture of pitch and tar, on which they strew powdered cockle-shells mixed with sea-sand, and scales of iron beaten small, which arm it in an incredible manner. And, to prevent fire, they rub it with a wash made of allum. But be sure to have your timber well dried, or else the internal moisture, for want of room to get out, will, as I said before, turn to rottenness. Let timber, that must touch lime, be capped with pitch, loam, or clay. Some affirm, that old oak, old walnut-tree, and young ash, are best for most uses; but in ship-work it does not hold good, for old timber will be brittle. An organ has been made of oaken pipes, that sounded very harmonious.

Take of the sand that is used in sawing large stones (the finest part of it) to which add the thickest drying oil. Spread that upon the wood, which when dry, will be like a stone, and preserve the wood for a long while, which may be very useful for fortifications, and other works. But then such wood should be thoroughly dried and seasoned, before the paint or composition be laid on, else the wood will be rotten the sooner, for having such a coat daubed or plaistered over it,

Sap.

It is the notion of some carpenters, that felling an oak in winter is best, for that it makes the wood of it endure longer, than when felled in the barking season, as having most sap at that time in its body, though in a thick and dryish condition, and therefore better for many uses. Others say, that it is best felled in the two months of *April* or *May*, when the sap issues out between the body and the rhind, and is so much employed in furnishing new matter to each bough, twig, leaf, and fruit, that there is less of it left in the body; from whence they infer, that the worm cannot breed so soon in a summer-felled tree, as in a winter-felled one. Others say it matters not, whether it be felled in winter or summer, for that the sap may be extracted at any time, if the wood is soaked long enough in water, and then it is most

most fitting for any use; because the pores or interstices, which contained such sap, become so many vacuities or empty holes, that, when dry, close up to the shrinking of the wood, and thus the wood gets a finer grain; for it has been observed, that a board has shrunk near one inch in ten of its breadth, to the great improvement of the wood, by reason the matter that breeds the worm, and continues the moisture in timber, is got out, and the wood made to acquire a much harder and closer body than it had before, which consequently secures it against warping, and a quick decay; for the sap or moisture, when it remains in the wood, is apt to give in damp weather, and tends towards the rotting it, as being of an aqueous saline nature, whose particles cannot be easily burnt to nothing, for, by burning the wood, the sap or salt gets fixed in the ashes; and of such a body is this sap, that when enough of green wood, as hoops, staves for casks, &c. are boiled in a confined place, the water will become glutinous thick, which, indeed, proves the sap of trees to be of such a body as strengthens the wood; and therefore steaming, I suppose, was thought better than boiling ship-planks, because the first way makes them pliant, and yet keeps the sap in, which is the more necessary to be done, as a ship requires the greatest of strength in her outward and lowermost wood; for it is

most certain, that the loss of sap causes boiled hoops, boards, or planks, to be brittle, and easily break short. This is what the greatest wood author has not closely observed, though it is a matter of importance.

Sorts.

Let authors write what they will of two different sorts of oaks growing in *England*, it is the opinion of many who live among them, that there is but one true native sort, as I said before, for that the spreading or upright oaks acquire their shapes as they are trimmed up, or as they stand open or close. But, if we would have different species of oaks, we must get exotick trees, by sowing their acorns; and thus they may be easily made denizens of our *English* climate. Of these there are great variety, according to Mr. *Lawson's* account from *Carolina*; as the chefnut-oak, which grows so high, that, if a large bird sits on its top, it is out of the reach of a gun charged with shot, and has a body of a proportionable thickness, with so big and sweet an acorn, that is therefore called the chefnut-oak. These are the largest trees we have, and yield the fairest and best plank, clear of any boughs, for near sixty feet together.—The red or scarlet oak is admired for the variety of its leaves, and colour of its wood, which some fancy to be the true mahogany

gany fort. It is a tree, that, in rich land, grows very large and lofty; but is so very porous, that it serves only to make rails, pipe-staves, good clap-boards, &c. as being a wood of no long duration: however, its acorns are now sold in the *London* seed shops, and sets of these young oaks may be had in plenty at several plantations and nurseries about *London*; for I hear, that this particular oak is in so much esteem with many, as to be planted as a rarity with great earnestness. The *Spanish* oak has a smooth whitish bark, rives well, and is reckoned a strong durable wood, and therefore made use of in ship-building. All of this sort bear good acorns for fattening swine. The bastard *Spanish* oak is a tree that partakes of the nature of both the red, scarlet, and the *Spanish* oak; it rends well, and serves therefore for making good fences, clap-boards, &c. It has a good acorn. The black oak is a very durable wood under water, and serves very well for house-work; bearing good acorns for hogs. The white iron or ring oak has its name from the long duration of its timber. It will prosper in poor land, and is allowed to exceed all for ship-building in *Carolina*, even beyond the live oak, whose planks run not so long as this; and therefore this black oak is in more esteem than that, though it will not last so long as the black oak. This generally bears great quantities of acorns

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The turkey oak has its name from its small acorn, which are greedily devoured by the wild turkies of this country. The live oak is an ever-green, that affects to grow in sandy soils, and has a wood that lasts longer than any other in *America*; but not fit to cut planks out of, because its trunk or body is of too short a length, and is of so hard a nature, that a nail, being drove into it, cannot be drawn out, and therefore discourages the sawyers from meddling with it: and though its body is too short for ship-timber, yet its limbs are for the most part so crooked, as to make excellent knees, &c. for vessels of the lesser size. Its acorns, sweet as chefnuts, yield an oil as good as that of olive, but of an amber colour, and serves some to counterfeit the cocoa, and with which they have made chocolate, hardly to be distinguished from the true sort. This wood is also used to make window-frames, mallets, pins for blocks, and many other things; is a very beautiful tree, and not of the slowest growth. It is said there are two sorts of the live oak, and both yields such good acorns, as produce excellent sweet pork, and are of so kind a nature, as to grow and flourish in fine branches, in fresh water ponds, in swampy grounds, and by river sides, as well or better than in dry soils. The willow oak, or water oak, affects to grow in ponds; has a leaf like a willow, grows in many fine branches,

branches, and serves for many uses. These excellent oaks not only serve for building houses, ships, fencing, making casks, &c. but also for several medicinal properties belonging to them, to the great benefit of man's health: and therefore, it is to be hoped, these useful trees will soon be much propagated in *England*, as well for these good properties, as for improvement of land, since all of them will grow either in vale or chiltern, in dry or wet, and in rich or poor lands. I have only to add, that there is another oak, called the white scaly bark-oak, good for building ships, as being one of the largest sort, but not so large as the chesnut-oak. It is called by this name, because of its scaly, broken, white bark, that is the coat of this tree, which affects to grow on dry land, and bears a large acorn.—Most, or all of these trees, would make excellent vists, avenues, and walks; but the scarlet and ever-green oaks must certainly excel for these purposes, and become a charming ornament, while they grow into great profit.

Largeness and Worth.

An oak of the duke of *Norfolk's* spreaded almost fifty-five yards square, and under its shade 1000 horses might commodiously stand at once.—At *Reedham*, an oak was valued at forty pounds the timber, and twelve pounds the lop-wood.

wood.—Near *Newbury* was an oak fifty feet high to the first bough, and cut five feet square at the but-end, all clear timber.—Another near the same place, since the wars in forty odd, held 40 feet excellent timber, straight as an arrow in growth and grain, and cutting four feet at the stub, and near a yard at top, besides a fork of almost ten feet clear timber about the shaft, which was crowned with a shady tuft of boughs. This oak was of so excellent a kind, that it cut a grain as clear as any clap-board.—There was also a third oak that grew near these two, of a very great size, in a gravelly clay, moistened with small and frequent springs, and these oaks were not three hundred years old.—Another oak was bought by a cooper, of which he made ten pounds every yard's length, for three or four yards. The main-mast of the Royal Sovereign was ninety-nine feet long, and thirty-five inches diameter.—In *Sheffield* lordship stood an oak, which had eighteen yards without bough or knot, and carried a yard and six inches square at the same height or length, and not much bigger than the root.—In *Firtb* farm there was an oak worth eighty pounds, and in the same there was another oak had 10080 feet of board, about half an inch thick.—In the same also stood a tree, which after it was cut down, and laid on the ground, two men on horse-back could

could not see one another's hat-crowns over the tree. This tree was sold for twenty pounds.—And here it likewise was, that 100 trees were standing, which were worth 1000 pounds.—In *Workshop* park lay the bole of a tree ten feet long, and no arm or branch on it, and about thirty feet about. There were several trees forty feet long of timber, which did bear two feet square at the top of forty feet. At this rate one of them, supposing it a cylinder, would yield above six tun of timber.—In another there was an oak called lady's oak, that contained forty two tun of timber, and had arms that held four feet square, for ten yards in length.—One *John Garland*, built a very handsome barn of five bay, with pan, posts, beams, spars, &c. of one sole oak-tree.—Another in this neighbourhood was so large, that every foot forward, one with another, was half a tun of timber: it bore five feet square, and forty feet long, &c. It contained twenty tun of timber, most of it sold for twenty shillings per tun; beside that, the boughs afforded twenty-five cords of fuel wood, and then the price of timber was small to what it is now.—In 1636, an hundred oak trees were sold for 100 pounds; but, being thought too dear, the buyer went from his bargain, wherefore they continued growing till 1671, and then sold for 560 pounds.—Another sowed three acres of barren land with acorns,

acorns, and, in sixty years, they were worth 300 pounds. — In some parts of the world, they have no other water to drink than what their trees afford them; not only by their proper juice, but from their attraction of the evening moisture, which impends in the shape of an evening cloud over them, as in the island of *Ferroe*, and many other places; for, if their woods were here once destroyed, they might perish for want of rain. — But how wonderful is the contemplation of the weakness of an oak's beginning, and the grandeur of its growth! — A table measured five feet in breadth, nine feet and a half in length, and six inches thick, all of entire clear oak. — *Mercenas* tells us, that the great ship called the *Crown*, which the late *French* king built, had its keel timber 120 feet long, and the main-mast twelve feet diameter at bottom, and eighty-five in height. But to come nearer home: there is an oak now standing in *Chesham* parish in *Bucks*, about seven miles from *Gaddeſden*, that a man bid fifty pounds for. Another at *Linslow*, about a mile below *Leighton Buzzard*, had 1000 feet of timber in it; it was forty feet to the first bough, growing near a river, and for which the owner was bid forty pounds. — In *Wales* is an inscription cut into the wood of an old beam, thus:

*Full sixty feet in length my stem did bear,
Beside my limbs, which very spacious were.*

Transplanting.

○ If you transplant oaks at any times, if the roots are but sufficiently covered to keep the body steady and erect, it is enough, and then all the mould possibly should be carried with the roots; for, in this condition, large trees have been transplanted with success at *Midsummer*, if they are planted to the same aspect they stood in before; but, if in winter, dig round the trees roots, so as almost to undermine it; then cast as much water as may fill the trench, or at least sufficiently wet it, unless the ground were very moist before. Thus let it stand till some very hard frost happens, and then carry it away to its new situation, where it may be preserved from freezing again by horse-litter; but, if the ground about it be over heavy, you may raise it by a crane or pully, hanging between a triangle, which will raise it, with mould about the roots, and then you may bring it away on a trundle, to be replanted where you please: and thus you may transplant trees of a wonderful stature, without lopping off their heads, which is of great importance, where it is practised to support a defect, or remove a curiosity; but such trees must be well protected for seven years against injuries.

English and Norway Oak.

Of all the common oaks growing in *Europe*, there is none so strong, tough, and fine-grained;

as the *Engliſh*, becauſe its timber is cloſer pored than any of them, and therefore has not room to lodge that quantity of ſap, as others have. It is on this account, that the heart of *Norway* oak (which, of the foreign ſort, is moſtly in uſe with us) will rot when the *Engliſh* will not, for it was never known that the heart of *Engliſh* oak ever rotted by the worm, if it had fair uſage, whether it was green or dry: but the worm holes, that are often ſeen in *Norway* oak, plainly diſcover, that the heart of its timber is ſo very porous, as to contain great quantities of ſap, which is the matter that breeds and nourishes the worm, and which occasions the deſtruction of this wood, ſometimes at a young age. But to be more particular; the goodneſs of oak may be known (when dry) by its weight, for it is generally allowed, that right good *Engliſh* oak will weigh, one fourth at leaſt, heavier than the *Norway* ſort, which, indeed, is of ſo ſoft a nature, that it is almoſt as light as ſome deal; for if a floor was laid with ſuch oak, and a perſon was to walk on it with nailed ſhoes, he would leave an impreſſion of the nails behind him. However, this *Norway* oak is not without its ſeveral good properties, as well as the *Engliſh*. It makes a fine pliant wainſcot, that works eaſier into ſhapes than the *Engliſh*; and ſo, in many other caſes, it is preferable to ours, which is of a
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more stubborn nature, and very hard to be reduced into the make of several instruments, that the *Norway* readily submits to. But the *English*, being much stronger and tougher, exceeds all the *European* sorts for ship-building; because its closer body enables it to resist even the balls of cannon so stoutly, that, if one enters its plank, it gives way to it more by squeeze, than by suffering a piece to be drove out into splinters, which the *Norway* oak cannot so well do, as being of a lighter and more porous body, that causes it to be easily penetrated, and to give way to the lesser force of balls, and which therefore flies into large pieces or splinters, to the greater danger of both men and ship; because it is supposed, that, if an *English* oak is cut down at a right age, and comes off a right soil, it is three times stronger than the *Norway* sort; not but that there is some *English* oak, which comes off bad soils, that is not so good as the best *Norway*; but I write of the general sort. In 1738, I was told in *Kent* by a sawyer, that oak has been lain in salt water, and the sap by this means has been found to be harder than the heart.

The Ashes of Oak.

The wood, as it is the king of timber, so it yields the strongest ashes of all the timber tribe,

and therefore are excellent to lay on grafs or corn land, for forwarding the growth of vegetables. But there is a difference in the afhes of oak; they are the ftrongeft that are made from green oak-wood, before the fap is wafhed by time, or wafhed out of it: fo, likewise, they are the lighteft, that are made from very old wood, or from that which has been soaked or boiled, infomuch that a pint of the former will weigh near as heavy again as a pint of the latter; which is a plain proof, that water will wafh out the fap of timber, as well as time wafte it. Thefe afhes are faid to cure ropinefs in beer; but the lee or lye of them, is not fo fit to buck linnen with, as that of other woods; becaufe this fort is apt to ftain the linnen with a reddifh difagreeable colour.

Acorns.

It is faid that a peck of acorns a day, with a little bran, will make a hog increafe a pound weight a day, for two months together. They give them alfo to oxen, with bran chopped and broken. Some advife to macerate them firft in water, to extract their malignity, left the cattle perifh. Thus they are moft proper for fwine; and, being fo made fmall, will fatten pigeons, peacocks, turkies, pheafants, and other poultry. Acorns, it is faid, were
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heretofore the food of men, by roasting them under embers, as many now do chesnuts. Almost every part of the oak is a sovereign medicine against fluxes. But to cure the acorns for fattening swine in *Hertfordshire*, we put two, three, or four bushels, or more, in a heap, on the ground, and sling our piss-pot now and then over them, which will force them into a heat or fermentation, and then into a spire, almost as long as one's finger, as they remain long enough in the heap; and thus they are cured of a most venemous quality, that seldom fails of giving hogs the garget, when the acorns are eaten by them raw in a sty. To which I add, that, by such spiring, the acorn is made sweeter than when it falls off the tree of itself, and thereby creates a keener appetite in the hog, and fats him sooner. But here I must observe, that it is too common a practice for invaders of another man's property, clandestinely to beat the acorns off the tree before they are ripe for their swine; but such usage hinders the tree from bearing several years.

Age.

When an oak is got past its full heart, the age of it is hard to be known; but, if it is cut down before that, it may be nearly guessed at, for then a wrinkle or circle will appear in

its body, and show by their number, how many years it is old, accounting each circle for one year. This is a surer sign than the wrinkles in a cow's horn, by which we guess at their age; because they seldom have more than one wrinkle or circle, till five years old, and that sooner or later, according to the time of her calving; but an oak, ash, fir, hazel, and most other woods, shew these marks at three or four years old, when they are about the bigness of one's thumb; so that, if a tree is cut at a right time, it may be easily perceived, even from three or four years of age.

Felling.

The state and condition of an oak-tree may be known by piercing it, or by digging about its roots, or, when the tree perishes at top, it is ever the mark of great decay in the roots. There are also swelling veins about the bark, that twine like ivy, and are an infallible sign of their hollowness, and consequently high time to fell it. In *April*, some say, is a wrong time to cut down oaks, because, while the tree is over moist, they are not so fit for the axe, as being more obnoxious to putrefaction and the worm. But, to make such a seasonable time, a gash should be first made in the pith of the tree, for the sap to run out, before it is sawn

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or hewn down ; for the vessels that ascend in the bark are called arteries, and those, that descend in the trunk or body, are the veins. Some, again, will not fell a seedling oak, because, they say, it produces a reddish wood not acceptable to the workman. Also that tree, that grows on the head of its mother, is seldom a good timber one. One foot of timber, near the root, is worth three further off. To make excellent boards and planks, some advise to bark trees in a fine season, and let them stand a year before felling, to harden the sap. It is said, that the *Venetians* let their oak lie some years in water before using it. Others bury their oak a foot in the ground; and some cure it by fire. I was told, that a gentleman in *Sussex* loses 500 pounds a year, for want of felling his oak.

C H A P. II.

OF THE BEECH.

THE white, or silver beech is the most common in these parts, where we abound in mountains and hilly grounds of chalks, clays, gravels, and loams, which make considerable returns of profit to their owners in the growth of this most valuable tree : It is this tree that makes many parts of *England* happy in its productions, and chiefly, because it will grow on the sides and steep declivities of chalky hills, where no other timber will thrive so well ; as may be seen in that long chain of high grounds, that runs from *Dunstable* to near *Wallingford*, which is above twenty miles to the westward, and lies mostly contiguous to the fertile vale of *Aylesbury*.

The black-grained, or black-barked beech, whose wood is of a longer duration, will thrive, and make its plentiful returns of wood, and mast, in the flats and levels of this our chiltern country ; and to speak more general, they both answer so well in any of these grounds, that I don't perceive any regard is had to the particular species of the beech in sowing the mast, or making plantations by sets. But it is certain,
that

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that neither sort of beech will grow to any purpose in the large vale of *Aylesbury*, or in any wet, moorish ground; yet will thrive very fast, and to monstrous size, in our loams, clays, and chalky grounds, &c. in the chiltern; insomuch, that I knew one felled in *Asbridge* park that had one hundred and fifty-seven foot of timber in it, besides twenty-one stack of fire-wood billet, nine stack of roots, and three hundred of faggots. Where also may now be seen great numbers of very large beech trees, as being accounted by good judges, one of the best wooded parks in *England*. This utterly confutes what a modern author says, That wherever the oak thrives the beech will, and that they delight very much to grow together——Whereas some of the greatest oaks have, and do flourish in this vale, that refuses entertainment to the beech, notwithstanding the many attempts that have been made by several to obtain their growth there; particularly by Sir *Thomas Leigh*, the present representative for *Aylesbury*; by their sowing the mast, and planting young beeches amongst, or near their oaks, within a few miles of that town, but to no purpose; for the beech will never make a good tree in their vale, spewy, and wet soil; nor will the oak, nor indeed, any other

timber tree, grow to any profit in chalky grounds; which obliged our forefathers, as well as those of the present age, to set the sides of their chalky hills, &c. with beech-mast, where this tree will run up to a vast height with great expedition; as may be seen on that worthy gentleman's estate, *John Duncombe*, esq; at *Barley-End*, near me: Nor can I be of opinion, that the oak and beech grow best together; but, on the contrary, I believe them best in their own company, because the beech grows too fast for the oak's pace; and, as if nature delighted herself with the entire growth of each sort, it generally happens in our chiltern, that where a wood of oak has been felled, a wood of beech has spontaneously succeeded; and when this has once got dominion, it will be sure always to remain master. This very case has happened to Sir *William Stanhope's* wood, about twenty years ago, within a quarter of a mile of my house, called *The Great Hoo*, where the young beeches grow so fast in the room of the oaks, that it is thought they will be fit to fell about twenty years hence.

This tree furnishes boards for outsidcs of barns, floors of chambers, and for threshing, wood for fellies of wheels, frames of chairs, ship and mill-wright, turners of hollow ware, and even for wainscot: In the water this wood

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is said to lie hundreds of years without decay, which makes it so serviceable in mill-work, &c. that they have chiefly by these means proved it timber, which formerly in many places was deemed otherwise, particularly in *Hertfordshire*. A famous instance of which, happened between — *Uxley*, esq; defendant, and the Rev. Mr. *Biby* of *Carrington*, plaintiff, about the year 1725; the contest was some time before the barons of the *Exchequer*, but was at last given in favour of the defendant, on account of its timber-uses in mill-work, keels of ships, and in house-building, &c. so that in *Hertfordshire* it is now deemed timber, as well as before this trial it was in *Bucks*, after twenty years old, and then tythe-free; but if any beech is felled, and another from the same grows up, this is to be tythed whenever it is cut down.

The Sap.

The sap of this tree is more destructive to its wood, than any other timber sort whatsoever; therefore it is a useful art how to get it out; for it is this sap that breeds the worm faster, and in more abundance than in any other, causing a swift rot and other misfortunes; which very material point has not, as I know of, been yet wrote of by any author; and it is so perfectly necessary to get the sap out of
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the beech, by some means or other, before the wainscot boards or planks, &c. are made use of; that otherwise they will bulge out and in for many years, as the weather is moist or dry, and so it will in flooring-boards, notwithstanding they are nailed down ever so fast; as I have proved in a garret-floor of my own, which unfortunately fired by a neighbour's house, but several of the beechen-boards were preserved and laid down again, since which they never stirred: Therefore if the sap could be got out, I doubt not but they would lie as well as other boards, as plainly appears by these of mine that were scorched and the sap burnt out: But in the two inch plank for barn-flooring, where they are drove down with wooden pins, they may lie well enough for many years; if immediately after sawing they are thrown into a pond or river, and there let lain four or five months, after which they must be thoroughly dried and layed twice. The practice of an old carpenter by me, is, to cut this tree down in winter, and let it lie on the ground two years, till the wood begins to be spotted or mottled; then he cuts it into planks or boards, and soaks them in fresh water; but if a person had the conveniency of salt water, I should think that would be much better: By this time, he says, the sap is so deadened and
hardened,

hardened, that the worm cannot breed so soon, nor so much in it; and has himself some in good order now, that were lain above thirty years ago as flooring-boards; for which use, thirteen are commonly sawed of solid timber a foot broad, but more for barn-sides, because the thinner the board, the less power the worm has.

Fire may be made use of in the smaller sort of beech trees, whose bodies do not exceed twelve or fourteen inches thick; that first should be hewn and squared, and mortaises made ready for plates, chimney-pieces, and also for somers and joists, &c. then they may be lain in length and supported at each end, so that four, five, or six together may lie even and close together about a foot or two higher than the ground; under these may furzen, fern, straw, shavings, or faggots be put to burn all their outsides till they have a thin, black crust; this will so embitter the wood, and roast out its sap, that there will be but small encouragement left for the worm to lodge and breed; because the worm undoubtedly has a taste, though an insect, and therefore will consequently leave the tainted wood, or die in it, and be prevented afterwards by this extraction of the sap, which is the prime cause of their first encrease. These somers and joists will lie very well next a fire,
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and where their ends do not rest on damp walls; but be they any where, their ends should first be dipt in melted pitch, as a preservative. I know of two houses that now have somers and joists of this wood; in one they have lain fifty years, as the tenant says, and the other thirty.

According to the modern practice, and, indeed, far the best it is, instead of cutting this tree down in winter, as the usual way has been, to fell it about a fortnight after *Midsummer*, when it is reckoned in full sap, or in its most flourishing state; for that then its juices are at the thinnest, and strongly employed in branches, leaves, and fruit; and then it is, the body has the least share of sap in it; therefore it will be much more run out, exhausted, and dried away by the sun's heat, than if fallen in winter. Now the benefit of this entire new method is not a little; for it has been proved, that the wood of a beech tree so felled, has endured much longer sound, than that cut down in winter; the trial was by letting both these trees lie on the ground in the open weather; and in very few years the winter tree was worm-eaten, and began to rot, when the other remained clear and sound; so that the very best way of all that is practised in my knowledge, is to fell this tree in summer, and let

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let it lie one year abroad with the rind on, sometimes turning it; and then saw it into boards or planks, which must be laid in a pond or river, three, four, or five months, till the sap is soaked or washed out: this will keep the boards from warping in a great measure, and cause them to endure forty or fifty years on floors, and against the sides of barns, &c. As to capt. *Cumberland's* method (for which he hath a patent) of extracting the sap out of planks, for ship-building, by sweating them in hot sand; I cannot say how it answers, because I have not seen the experience of it: but the trencher-maker is so cautious of getting the sap out of this wood, that as soon as he has cut them out rough, he throws them into boiling water, which directly brings out the sap, and then they will keep their white colour, and be more free from the worm; which otherwise would in a month or two eat through their thin substance.

Uses.

The best experienced method, then, is to fell it in summer, and saw it out directly for timber use; for a tree so cut into pieces, is brought under the power of the air much more and sooner than when in one round body; and then must be carefully preserved from the sun and wet under cover; where the sap will be sooner dried

dried out, the colour kept in, the wood hardened, and the worm greatly prevented; for it is certain the sap of a tree is in two different states in a year: in summer, a fluid, aqueous body, rarefied by heat; in winter, a glutinous consistence, densified by cold, which has caused different opinions about its circulation: one author asserting it to ascend and descend gradually all over the tree, as the blood moves in the body of animals: another, that the sap in the north-side is not always so thin as that in the south, and therefore denies it that regularity: and I have heard a workman in this wood say, that that part of the tree that stood to the south-east aspect, rended or split more trim and free, than the other contrary sides; but however that be, it is allowed, that the sap is the immediate cause of the worm's breeding; which being of a moist nature, all dryness is an enemy to it, and by consequence, a conservation of its wood. In the late great fire at *Aylesbury*, there were some timber plates saved, that had lain sixty years in one of the houses there, and shewn by an old carpenter as thorough sound beech. So great a friend is cover and dryness to this wood, as has been obvious in a chair that was made of it, which usually was kept by the fire, and is now in good order at above thirty years old; when others that stood in a more dampish place, rotted in seven years. To avoid
then

then the pernicious effects of dampness, that suddenly helps the sap in the production of the worm and rot, I here caution every one concerned in laying a barn floor with this sort of wood, that they do not lay the planks too near the ground; if they do, they will surely rot in less than seven years time; therefore the best remedy is to lay them on somers and joists, about a foot or two from the ground; for nothing decays it faster than to let it lie wet and dry; several farmers of late have laid it thus, dry and high, and yet have an easy passage with their cart or waggon into the barn, by a rising made of boards, with cross ledges nailed on the same, to stop the horses feet, like that by which horses and coaches get into ferry boats; or by a rising ground made on purpose for this occasion. Now there are two ways of laying these planks to thresh on, to hinder their opening at the joints (which they are apt to do though layed twice) and letting the corn thorough; one way is, to lay one plank a little over the other at bottom, but this loses too much of it; the other is to make a groove in each plank, and put in a slip of wood, like a lath, which the carpenters call tongueing it: some also saw the boards of beech feather-edged for the sides of barns, as believing they best carry off the water this way. The price of this timber here, is six pence the solid foot; the boards seven shillings

shillings and six pence a hundred, and the planks for thrashing-floors, two pence half-penny a foot, both superficial measure.

Mast.

The beech excels all other trees in parks, &c. for the returns it makes of prodigious quantities of sweet, healthful mast, which greatly helps to subsist the red fallow deer sometimes, for most part of the winter, as I have seen in that of *Asbridge*, near my house, which is seven miles about, and contains twelve or fourteen thousand heads of both sorts. The expressed oil of this mast, I have thought very pleasant to my taste, and near as good as that of olive, and is said to yield two gallons from one bushel; then if one hundred and eight trees on an acre, at twenty foot distance, were to afford five bushels on each (instead of fifty, as some reckon) that would amount to five hundred and forty bushels, which, according to this calculation, will produce one thousand and eighty gallons of oil, that may very well be allowed worth three shillings per gallon; and if only out of that sum, one shilling was to come clear to the owner, what an immense profit must here be to those that have great numbers of acres of this wood, besides the benefit of the timber's growth? Nor are the hulls without their value, for of this the poor sweep up great store

store for their winter firing; and when the mast happens to be plentiful (which commonly is every second or third year) we farmers generally get our hogs almost half fatted, before we put them up for bacon. The leaves, if gathered before the frost, and about the time of their fall, makes the best of mattresses to lie under a feather-bed, or otherwise, that will continue sweet seven or eight years, by their tenderness and loose lying; so that the wood and leaves make both house and bed, and the former the best of firing; of which I have sent several stacks to Mr. *Roger Williams*, at his house in St. *James's* street, who makes a great consumption thereof.

The beech, by its large bud, discovers to the countryman about *Christmas*, that there will be a probability of a mast season the succeeding summer; and when the seedy bloom out of this bud shews itself, as it will sometimes near an inch or two long, with a sort of rough head, somewhat like a golling in *April*, it is then a confirmation, if the extremity of weather does not destroy it. Beeches are best raised from their mast, which are usually ripe some time in *October* or *November*, when they should be gathered and directly sown on ground that has before been sufficiently ploughed into a fineness, and duly manured: but if this work is deferred till the spring, then the seed must be laid in dried sand, and not into

that which is wet or damp; for then their radicles will be in danger of sprouting before the sowing season comes on, and that is when the great frosts and colds are mostly over, which happens sometimes in *February*. This seed differs from all other timber sorts, in that it comes first up with the seed on its head, opening in two parts like a kidney-bean, then succeed two leaves, and so proceeds: it is therefore that this seed must be ordered accordingly; for as it is obliged to make its way out of its native mould, under the disadvantage of such a large open head, it requires a light, hollow earth, wherein this seed is sown, otherwise it will lie and rot, as not being able to make its way through; so that to sow it in a stiff, clotty soil, and to plough it in under thorough, or to set it deep, is downright burying it, to the owner's loss and disappointment. And as this description of the seed, and caution of its first management, has been wanting in all authors I ever met with; I shall therefore advise my reader to sow two bushels of this in its hull, or without, on an acre, broad-cast, on broad lands, well harrowed in both ways, on such ground, and at such time as is before directed; so that I shall not further enlarge on this particular, because what I have writ of the acorn may suffice, in shewing the further ordering of this; I shall only add, notwithstanding all that is, or can be said

of

of the several methods to get a wood, either of oak, beech, ash, and many others, yet there is none so perfect and genuine as that which is raised directly from the seed; because no transplanted set or tree can possibly be taken from one, and replanted in another earth without violence done to some of its fine capillary roots, which has been the occasion of many ill consequences, too long here to enumerate; and therefore the second-hand way is only to be made use of, where the first cannot conveniently be done; for it is obvious to common reason, that the root of any tree has the most propitious opportunity of making its gradual growth from its radicle or sprout, that never afterwards meets with opposition as transplanted ones do, that are not naturalized to the ground; which is the cause that their genial roots push with more vigour, grow stronger, and stand in need of less watering, than the replanted ones do: nor do I believe a tree will be so good timber, as that raised on the spot from its seed: and, for ought I know, it may be the real reason, why the elm that is generally transplanted, is often a more shaken shattered tree in its body, than any of the timber sort are. In that part of the country, remote from woods of beech, the mast of this tree may be transplanted, where it may be sown either in their fields as aforesaid, or in their nursery-beds,

in shallow drills well manured, as we do the *French* bean; and this either in *October* or *February*, and afterwards transplanted into another bed, at a foot asunder, till they are of such a bigness as is desired, to plant out for good in a hedge or field: however, as I am now writing from a woody country, where beechen sets may be had in many places, I shall enlarge on the propagation thereof, as being made use of by many here as the readiest way, particularly to raise hedges with. In our woods of beech, arise spontaneously great numbers of young shoots, which about *October* (for that is the very best time) may easily be drawn by a man's hand, especially if great rains have lately fell before; these, I say, may be had of any size, but the best in my opinion, are those of two foot long; for then the set has commonly a good root, which a smaller one has not: these must not have their tops cut off, for then they will not grow, as several have experienced, that would not be convinced, till trial warranted the truth; and of this authors have hitherto been deficient in their writings; but the side-branches ought not to be cut off, till they are at a sufficient height, and not then close to the body; for the beech either in set or tree, does not agree with the edge-tool, like some others: this order then to obtain a wood by transplantation, I propose to perform two several ways:

ways: First, let the ground be well fenced, ploughed and manured in broad lands; then on this level earth run a line across the field, and at every ten or twenty foot distance, plant one or more of these sets on the surface, and mould it up with a border, putting a little fern between, and some on the top, leaving a small hollowness or dish about the root, in the manner cucumbers are set in a garden, for the water the better to descend to the root; and when one row is done, then to move the line to ten or twenty foot further, and so on; these may be kept watered and houghed, according to the pleasure of the owner, and artificial or natural grass enjoyed in the interspaces, &c. Secondly, by the plough, the ground may be so gathered into a four thorough sitch or ridge land, and on that may be made a thorough or gutter, by drawing the plough once through the upper part of it; in this may be planted at every ten or twenty feet distance a young beech, and the rest of the sitch filled up in a row with sets of hazel, fallow, and other underwood, but so that each beech must be planted in one row, against the middle vacancy in the other row that is to be at six foot distance; this way will give an opportunity to keep the interspaces, as I have said before, clean, that the root may not be impeded by weeds, and thereby better watered by the descent of the land be-

tween the rows, as may be seen at Sir *Thomas Seabright's* grounds, near *Market-street*: by this method, the trees and underwood are also better preserved against thieves; for here a cut stick may be easily missed, when those planted promiscuously are difficult of discovery, which has so encouraged this sort of rapine, that I have seen a young beech of I believe twenty years old, that was cut down, the stump daubed over with dirt, and was carrying away on a fellow's shoulder, when I met him in the wood.

But before I finish this article of raising a beech wood by seed, I add, that whenever this is to be done on the side of a chalky or any other hill, the best way will be to perform it with the help of the *Kentish* wheel turn-rise plough, and that because this noble instrument will plough all the ground one way, at going backward and forward, which none of our *Hertfordshire* or any other ploughs can do; and remember with this same to plough the ground beforehand into a fine tilth, well dunged and manured. Then the last time, sow this triangular seed clear of its common rough hull, two or three bushels on one acre broad-cast, and plough it under thorough; for that in such a loose chalky land, this way will help to make the young shoots stand fast, and preserve the seeds from fowls, there being no danger of burying the seeds as in stiff flat soils.

The

Chap. II. OF THE BEECH. 423

The benefit of this operation consists also, in that you turn all the thorough downwards, that the common ploughs turn both ways; for if in this situation you were to turn the ground upwards, it would be apt to fall down again, and so spoil the undertaking. Where the beech mast seed is to be sown in a flat clayey or other stiff land, then after the last ploughing, and before the earth is harrowed, sow your seed broad-cast on the rough ground, and harrow once in a place long ways, and once in a place cross ways; or if the land is between stiff and light, then sow half your seed under thorough, and harrow it in.—
Beech has no heart, as being all alike in its body; the elm has heart; the oak has heart; the cherry tree has heart; the aquatick has a little, but the maple has none: now if you soak oaken, cherry tree, elm, or other boards in water a fortnight, it will make the sap and heart part all of a colour; nor can they be discovered, unless the plane new shaves them, which gives a knavish carpenter or others an opportunity of exercising a fraud, by selling sappy boards for hearty ones.

C H A P. III.

O F T H E E L M.

A Plantation of elm may be contrived to great profit, by planting the trees in regular rows, in *October* or *February*; and the ground about them laid down with grass, and not imployed in grain, which, in my humble opinion, is far preferable, as I have found by experience; because this will feed sheep, whose dung and stale is of most virtue in the nourishment of all trees, and are less capable of hurting them by their rub, than horse or cow; but then especial care must be had that they can't come at the body of the tree with their oily wool; nor will the roots of this tree exhaust, and draw away the goodness of the adjacent earth, as an ash or oak will, whose roots run both deeper and broader in the ground; but affords a pleasant healthful shade by its head and body, to the cattle about it; free from those voracious and insidious qualities, inherent to the oak, ash, and walnut. These trees then so planted (with their heads cut off, or some left on, as the proportion of their roots will admit of) will amount to one hundred and eight on an acre, at twenty foot asunder, which at their full growth modestly may be computed worth

worth forty shillings each, at one shilling *per* foot, though the current price is from ten pence to eighteen pence, according to the clearness and goodness of the body; which with the benefit of the grafs between them, must amount to a brave sum in that time; considering such land whereon they are planted, may not be worth six or eight shillings an acre; and indeed it is pity that more hedge-rows are not planted with elms; because, as I said before, they don't damage any thing about them, as some other trees do, whose heads must not be trimmed up as these may, and yet so profitable, as to be worth in time five or six acres of land, that they may thus enclose.

This tree when aged, or otherwise requiring a renovation, by cutting off its arms and head, they then should be cut close to its body, else the stumps in time will become rotten, and convey the water too freely, even to the heart of the elm.

As the elm is not a proper plant for raising entire hedges to fence our field with, I shall desist enlarging thereon, as being a subject rather belonging to the gardener's province, where it is now more agreeable in hedges for walks, avenues, &c. for, according to the proverb, a shoemaker ought not to go beyond his last: it is therefore that I think a gardener
and

and farmer are different professions, although their business has an immediate concern in vegetables, and I believe are equally strangers to each others affairs.

Elm boards to dry soon were cut in *March*, and laid a month in water: Others were kept out of water and dried, they were both laid on one floor before harvest time; the unsoaked shrunk, when the other did not; so that to have them soon and thorough dried, soak them first. Elm is more profitable to plant even in a wetish vale ground than white wood: A person in the parish of *Ivinghoe*, in *Bucks*, planted an elm himself, and at sixty years old he cut it down with a hundred foot in it, that he sold at one shilling *per* foot. He also planted a white wood tree, that at sixty years end was as big as the elm, but it was hollow about three foot from the root, though all the rest was sound. It is true, that a white wood often out-runs the elm; but then as the latter sells for one shilling a foot, when the other but for sixpence, the elm is the most valuable to the owner. —An elm strikes his roots as deep into the ground as an oak, with sometimes one fork, sometimes two or three, and therefore does not impoverish the land like an ash, that spreads more its roots, and runs up higher than any other. The elms roots, especially in winter, are the

the most slimy of any ; a man dug twelve foot to come at the end of them, but he gave over his search in despair ; this was in a gravelly soil at *Fritbesden*, in which sort of ground it grows the more spalt or brittle of any, insomuch that the wheeler is apt to refuse buying it to make his stocks of wheels ; because it often splits in straining, when that which comes off clay lands will not : It also grows more hollow here than in the red clays, and so it does in their marly soft earths——An elm was cut down in winter, and at the next spring it threw out young shoots all over it.——If the top of an elm is no broader than the head of a broom, it will grow as well as if it was ever so large, which makes them right to grow in hedges, where at a moderate distance they will do no harm ; for this reason it is, that many, when they plant young elms, put their roots into the ground with a body twelve foot high, the side-shoots trimmed pretty close, and the head very narrow.——The owner of a considerable estate in *Oxfordshire*, told me, he was sure an elm would not grow so fast in wet ground as an oak.——Elm and maple are first out in the spring, and their sap will run out of their roots at any time in winter if cut,

Witch Elm.

This tree is a most proper one to grow in parks, because of its agreeable bark, which the deer greedily eat in winter, and have so great a love for it, that they will string it with their mouths to the last bit, and prefer it to the ash, thorn, or any others: It is a tree that grows to a great bigness, even to four or five foot diameter in its body, and will prosper either in standard, pollard, or in stems, in copses or hedges, where they will grow in many fine, high, straight poles, and shoot expeditiously and large: The wood of this tree is tougher, and more durable, than the common elm, and serves to make coach-footings, gates of fields, somer and joists, &c.

This is reckoned as fast a grower as any, even the fallow itself; for it spreads its roots near the surface like an ash, in clays, gravels, and loams; throws up plenty of suckers, like an asps or *Dutch* arbel, which is also a quality incident to the natural elm.

At *Latmas*, near *Cheesham* in *Bucks*, and about eight miles from *Little-Gaddesden*, in the late lord *Cbeney*'s estate, there stood a monstrous witch elm that was believed to contain twenty loads of timber in its body and arms. It was so big and hollow, that, after it was cut down, a man on horse-back has rid into it; and, had that

that worthy lord lived a little longer, he designed to have a place cut through it, while it was standing, for his coach and six horses to pass. Also Dr. *Plott*, in his Natural history of *Staffordshire*, tells us, of a witch-elm, that was so very large and tall, that two able workmen were five days in stocking or felling it down; that it fell forty yards in length; that this tree, at the butt-end, was seventeen yards in circumference; that it was eight yards and a half about by girth-measure in the middle; that fourteen loads of fire-wood, as much as six oxen could draw 300 yards, broke off in the fall; that there were forty-seven such loads more of fire-wood cut off from the top; that they were forced to piece two saws together, and put three men to each end, to cut the body of it in sunder; that there was cut out of it eighty pair of nathes or stocks for wheels, and 8000 feet of sawn timber in boards and planks, after six-score *per cent.* which, at three shillings *per cent.* came to twelve pounds: All which is attested under the hands of Sir *Harvey Bagot*, and his seven servants. It had ninety-six tuns of timber after their gross country way of measure; but, nicely cast up, it must contain 100 tuns, a fifth part being allowed for the waste of rind, chips, &c. This mighty tree grew at *Field* in *Staffordshire*, and the original paper

was

was put into the doctor's hands, by Sir *Walter Bagot*, bart. the then, and, for aught I know, the present proprietor : He had it also from the mouth of *Walter Dixon*, who was surveyor of the work.

It is surprizing, that this beneficial tree is not more planted, since its wood sells for as much as other elm, when it is right good, as being near as durable as some oak, when cut down in its full maturity ; for then it is hearted like the common elm, is very valuable for building of houses, barns, or the like, and will last almost like such oak, either under cover, or abroad. Its bark is likewise of considerable worth for feeding deer in the winter season, who love it beyond the bark of ash, thorn, or any other, as may be perceived by their greedily brousing on its arms, when cut off for this purpose ; for this bark is composed of such stringy parts, that a piece, or slip of it, may be run out in a string of twenty feet long, and, being twisted with more, will be so strong, that a horse can't break it. This tree, which will, in a right soil, grow as big or bigger than any other tree in *England*, may be propagated by its seed, which grows in kids or keys, like the ash or maple, or in any other form, like the common or natural elm ; will thrive in gravels, loams, clays, or moist sands, and that in single growth,

growth, or in hedges; will suffer lopping, and therefore is valuable in hedges and coppices both in vale and chiltern grounds, where their stems will shoot into many fine straight poles from the earth, to great profit, as being ready for cutting at nine, twelve, fifteen, or twenty years growth, according to the use they are wanted for, and with which we make hurdles, gates, poles, and many other things in husbandry; for this sort of elm is far beyond the natural sort, on account of its easy rending, which the other is not so apt to do. It also makes excellent brown boards for floors, and bowls, dishes, and other utensils, for the turner's benefit: bavins and faggots, of seven feet long, to lay in ruts, to prevent wheels sinking in, may be made of this wood; and, if these are laid one on another for a foundation in morassy, spewy grounds, a good road may be made, if a sufficient quantity of stones are laid over all: Therefore, I can't but think it strange, that this useful tree should be so slighted by Mr. *Houghton*, as to induce him to say, "I hope we shall see no more such great trees in *England*,
 " for that the ground they might grow on will
 " be better employed; although, I must confess, elms commonly grow in hedge-rows,
 " and spoil as little ground, as most trees do,
 " and they are very useful to grow near cities
 " and

“ and towns where the water is carried, in
 “ pipes under ground, to the particular
 “ houses.”—To this account, I add, that in
Nettleden gravelly bottom, joining to *Little*
Gaddefden, there grow several witch-elm, and
 natural elm trees. The witch-elm, in this,
 acquires a tougher wood, than it does in some
 other earths, and the natural or common elm a
 shorter and softer wood, than it does in clays
 and stiff loams; and when it is so, the grain
 does not knit, or grow twisting one part into
 another, which renders it not so good for stocks
 of wheels, chopping-blocks, &c. as when it
 grows curled and hard; but when the natural
 elm is in full perfection of hardness of grain,
 it is better for these uses, than some of
 the witch-elm, which being of a tougher,
 but softer nature, is sooner apt to crack and
 split than the natural elm; yet, in a right soil,
 there have some witch-elms grown so tough,
 and their grain so twisted, curled, and knit,
 that I have heard sawyers affirm, it is the worst
 wood for their profit that they work on; and
 then such witch-elm wood proves tougher, more
 curled, and more serviceable, for both the
 wheeler’s and turner’s use, than many of the
 natural elms, whose bodies are composed of a
 softer wood, and straighter grain: And it is of
 such witch-elm that the most durable sort of
 great

great hollow butchers trays and chopping-blocks are made, for these won't crack, nor can be so easily cut, as other wood, and therefore the largest and best of hollow bowls are made with this wood; and though the timber in general is not reckoned so good as the natural elm, yet the bark of the witch-elm out-does it; for the bark of this tree, at any time of the year, will make bafs-ropes, somewhat like the strings of the cocoa shell, but not so fine.

CHAP. IV.
OF THE ASH.

IT is become a rule amongst the judicious, not to plant or suffer any ash to grow near any ploughed ground, because of its voracious nature, and the great suction it makes in drawing out the goodness and heart of the ground, to the depauperating the land, corn, and grafs that is in reach of his horizontal roots; and yet this evil is very common, but chiefly owing to the ignorance of the past age; however, it has so deterred many of the present, that they abhor the sight of an ash that grows near the corn grounds; wherefore, to avoid the curse, and enjoy the blessing, the best

places to procure the growth of ash, is in forests, woods, coppices, parks, and commons.

To get a wood, or copse of ash, it may be done three several ways. First, by sowing their seeds or keys (that have been preserved all the winter in moist sand, to keep them from shrivelling) over a piece of well manured and ploughed ground, which must immediately be sown over again with barley: These two will so well agree, as not to hurt each other; for the ash will not appear till the succeeding spring, so that the barley may be got off as at other times; after which, the young ashes may be houghed and thinned at pleasure.

Secondly, but which I think is much better, when the young ash trees are sown, there may at the same time be sowed both acorns and sweet *Portugal* chesnuts; these likewise will be of hardly any prejudice to the corn, because in the first summer, they will only be employed in striking roots under the propitious shade and shelter of the barley; and if a little of the seeds of the acorn or chesnut should appear at mowing time, the scythe may easily pass over them: Now these two sorts are certainly the properest to keep the ash company, by reason they strike their tap or master-roots very deep into the earth, to seek their food in a different manner

manner from the ashes, that may be left at five foot distance each, and then one thousand seven hundred and sixteen will grow on an acre of ground.

Thirdly, if it is thought better to get a wood from the set, or young transplanted tree; then the keys may be gathered in *October* or *November*, and directly sowed on fine mould in a nursery, and covered an inch or two deep with earth; the second spring following they will come up, and afterwards may be transplanted in another bed, and so brought up to your desire. But here we gather the young sets out of our woods, about a foot, or a foot and a half long, or more, and transplant them forthwith: In this management, great care should be taken to get both them and the keys from the female-ash, because that grows much sooner to a large body than the male. Now the female has generally a clear, white, smooth bark, but few or no keys, and loves low places: The male has a rougher, knottier bark, and harder wood, has more seed, and is more tedious in its growth. It was about ten months since that an acquaintance of mine bought an ash at *North-Church* common, that contained six hundred foot, four hundred thirty-eight of which, he paid one shilling *per* foot for.

Now the method of planting copse wood, I have seen in a gentleman's ground near me; first they manured it very well, and ploughed it into a fine tilth, then they gathered it with the plough into ridges, at six foot distance, whereon in *October* they planted ashes, at twenty foot asunder in lines, and oak, chesnut, hazel, fallow, in the same row close together; the ashes were about eight foot high, the rest small sets; these all drawing their nourishment from the earth in a manner peculiar to each other, does not so depauperate it, as if they were all of one kind, notwithstanding they fill all the surface with their roots; and therefore a copse wood promiscuously planted, will endure much longer than if it was all of one sort: and here is an opportunity allowed between the rows, for the hough to be employed, and the ground kept clean from weeds, and manure laid in the interspaces, to the great improvement of their growth; and by this the trees will force one another into the air, caused by their close planting; where, by the drip of their heads falling upon their under-shoots, and the great cover they are shaded with, their lower arms will be killed or spoiled, so that their sap will be chiefly employed in the growth of their bodies and heads; and then the underwood will be fit to fell in nine, twelve, or fifteen years,

as.

as it is wanted in bigness; the proper time for which, is from *November* to the beginning of *March*. But here I must take notice of a pernicious neglect, that too frequently happens to the ash poles, which are generally put together after they are cut into upright parcels in the wood, and there let remain till they are sold: Now if they are not carried away before *March*, a little black fly, that comes in swarms about that time, or in *April*, will seize on and penetrate into their tender bark, and there in a little time become a small worm, that afterwards will gnaw the wood in rings, so that the cooper cannot bend them for hoops; but when the fly has but just taken them, the cure is to throw them into a pond, and let them lie two or three days, till they burst and die. But the best prevention of all, is to keep them in cover presently after they are felled.

Pollard Ash.

On commons, in parks, or in any other grass grounds, this tree has an advantage of all others from its many and long roots, which by their circular spread, and high lying almost on the top of the ground, are more than ordinarily capacitated to receive the fertile benefits of the horse, cows, deers, and sheep's dung and stale,

F f 3

which

which is more or less obtained as the situation of the tree, and its sheltring tread invites the cattle to shade themselves under it. The pollard ash is that which is made by cutting off the standard's head, and should be lopt for that purpose, before it arrives to a very great body; else the wets will be very apt to get in between the rind and the body, before the wound can obtain a new covering, and so rot and perish the whole tree in a short time; and afterwards all lops should be cut off the head of the pollard, at nine or almost at twelve years end, before the shoots get too big; for certainly the younger they are cut off, the sooner the wound is covered, and the longer it will continue in a healthful, bearing state; but it has been observed that the ash, as well as all other sorts of pollards, grows slower in its body, than they did when standards; because the sap which should cause its bulk, is employed in nourishing new shoots. This lop, when green, burns the best of any, which makes the country folks rhyme it, and say, *It is fire for a queen*. It is also of vast service among deer, especially in hard weather, when it serves as a sort of subsistence to them; for on its soft bark, both they and the tender-mouthed heifer, will bruise and peel the arms and boughs quite clean.

If

If you cut off the head of a young ash to make it a pollard, it will grow larger in its body afterwards, but not so fast as if its first head was on.—If you cut an ash down in the spring, when the large black bud is on it, the body will rot into powder in little more than a year's time, which shews that winter felling is best for this tree.—An ash has the biggest veins of any tree, and a heart and sap part like an oak. Some are of opinion, that an ash is best felled between *Allballontide* and *Christmas*; because it is the first and forwardest sap that stirs. If felled when it is in motion, it will be red between the bark and the body.

Ashen Stems.

In many hedges, numbers of these are seen to grow, as the successors of cut down trees, but whether they are here by casualty, or planted on purpose for this use, it is wrong management; for these shoots that grow directly from the stem, rob their neighbour plants so much by their luxuriant roots, as to impede and hinder their keeping pace in growth with them, which causes its head to spread, top, and drip on them to their great prejudice: It is these that are more coveted by cattle, beyond any other in the hedge, and therefore more liable to be

F f 4 cropped

cropped and stunted, which obliges us to preserve them for the first two years after cutting, till they are out of the cattle's reach, though at best they make but a hollow part in the hedge, and often give room to sheep and other beasts to find a passage into neighbouring grounds; so that the ash stems are indeed fit to grow no where else but in woods and coppices, and here they turn to a great account, in the production of the best of poles for the coopers and chair-makers, by letting them stand eighteen years, which is twice the time that is allowed to fallows, hazels, maples, &c.

Standard Ash.

This is still more pernicious in a hedge than either the pollard or stem; for this, by its uninterrupted growth, gets a greater head than the rest, and so is more capable, by its venomous drip, to damage all others that are contiguous and inferior to it. But here the ill property of the ash does not end, for its leaves are of such a disagreeable nature (I can't say how unwholesome) that I have known a considerable quantity of stout-beer spoiled, by brewing with pond water wherein its leaves fell; and notwithstanding the beer had above a year's age, yet neither that, nor the strength of the hop, were able to take off the leaf's nauseous taste.

When

When this tree by mistake has been suffered in a hedge, or otherwise, to grow so near the ploughed ground, as to prejudice the land and the grain that grows thereon, by its roots; then the best remedy next to its total extirpation, is to dig a narrow ditch, and with a mattock to cut off all its roots to the outside of the ploughed ground for about a foot or two deep, which is full enough; because at a greater depth, they cannot hurt the superficial part of the earth; then fill in the same with the mould that came out: thus you may keep any ash from hurting the land, especially if there is a baulk of grass between the ploughed land and the body of the tree, as there is in most of our *Hertfordshire* inclosures.

And notwithstanding this tree is known to spread beyond all others, yet some of its roots have been found to run fifteen foot deep into the ground, and will, like most others, grow faster in the best earth, which it will infallibly peel, though it will grow in most situations, from the tops of hills, to the flats of vales; and where a knotty, sound tree happens (as they often do) to be well grained, they are of considerable worth to the cabinet-maker.

The seed that is in the keys are flat, somewhat like that of a cucumber, and is carried by the winds the distance of some poles from their trees;

trees ; but this is not all their conveyance, for these seeds being much loved by the great and small birds, are by them carried to distant places, where they peck out some and scatter the rest ; and in this manner they have been known to seed a piece of ground at *Dagnal*, near half a mile of the wood where the trees grow ; some again have enjoyed plantations from the seeds that were blown by winds ; others have had the benefit of some thousands of pounds from their produce, and all of their own planting.

The rinds and tops of the young ashes, even when the trees are a foot diameter in body, are so coveted by the red and fallow deer, that large, high rails are frequently put up in parks, forests and chaces, as guards against these arch enemies ; sheep also will debark the young trees and shoots in hedges more eagerly when they are fattening on turnips, as being a cool, refreshing food, contrary to the hot, bitter turnip. The mice too, though a small creature, are great destroyers of the young ash at all times, but more in snows, for then the woodmen have observed that they have peeled an ash, from the thickness of a thumb to a fork-stale, a foot above the ground,

C H A P. V.

OF THE WALNUT.

THIS tree for the many uses its wood and fruit affords, deserves the preference to some others for a plantation; and now more than ordinary, because of the great numbers that are frequently felled for the lucre of the money that their valuable bodies raise to successors of better husbands than themselves; their price being from one to two or three shillings the solid foot, according to the fineness of its hearted grain, in trunk and root at forty or sixty years old, when these trees are generally at their full perfection; and sometimes one of them is sold to the cabinet-maker for thirty, forty, or fifty pounds; and as the root is often a valuable part of this tree, it should not be sawed or cut down at bottom, but stocked and grubbed entirely up. Nor is the sap-py part without its great uses in stocks of guns, chairs, wainscot, and other works, that the several artificers make exquisitely fine, when done over with its own oil very hot, made by expression of the kernels, that are said to yield three quarts from a bushel of its nuts; these may also be preserved for eating, in covered pots put into the ground, so that the wets cannot annoy them, and then they will keep nine or ten months, and

eat

eat near as well as at first; or if they happen to be dry, it is only putting them into warm water a little while, and the kernel will swell, and be almost as good as ever.

Their sorts are two, the *English* and the *French*: the latter is a large, thick-shelled one, and is best for pickling and preserving; the former a small sort, but much sweeter kernelled, and may be planted in grass grounds at forty or sixty foot distance, by taking off the turf and laying it by itself; then take the next mould a spit deep and put that by itself; then put the turf the grass downwards, and the mould that came out on that; in which put four or five walnuts so far within the earth as it may just cover them, if the diameter of the hole is three or four foot: these holes thus made and planted, must be securely fenced by outside, general railing the field in, or particularly round each hole, so that there may be free access of weeding them; afterwards the master-plant may be left as a standard tree, that in time will make both pleasant and profitable walks; and thus this tree will by far outgrow all transplanted ones, as I have to my cost experienced; for it is now near twelve years since, that I was tempted to purchase a parcel of about twenty years old of a nursery-man, some of which, to the best of my belief, as big then as now in their bodies, notwithstanding I planted them

Chap. V. OF THE WALNUT. 445

them in a rich loam, and three years ago cut their heads off, leaving at the same time a few shoots on, to draw up the sap; since which they have shot very strong, and now are like to make fine trees: but if the nut had been thirty-two years ago put into the spot of ground where they now grow, I doubt not but they would have been a foot or more in diameter of their bodies, which are not above six inches in the biggest of them.

Or if they are to grow in ploughed grounds, then it must be well manured and ploughed fine, before the nuts are set in at nature's best time, which is as soon as they are full ripe; or if kept till spring, they must be preserved in sand all the winter, and by some they are steeped a while in milk, just before they are planted in *February*, and then they will agree and thrive best in marly grounds in the vale; and also will grow in chalks, gravels, and loams, and in most situations. And as I am now writing of planting walnuts in ploughed grounds, it is necessary to mention the great inconvenience that attends the ploughing of the ground between them, which by consequence must happen, although the trees be at eighty foot distance, and that from the often passings, and near approaches of the plough, horses, and harrows: and here I will appeal from the theory writer, to the man of better judgment, whether the

roots

roots of such a tree, that is to run even with, or just under the surface, can make its horizontal roots, and not be impeded by the often repassings of the plough, that should penetrate the earth with its coulter and sharr, a foot deep at least in some sort of its operations? If it should be objected that at that distance they need not come so near as to hurt them: I answer, that such a plantation is liable to be hurt by so many accidents that may happen from the horses, ploughs, carts, end-turnings, and careless drivers, as is enough in my opinion to discourage any such undertakings: I must own I have seen some such practice in the old *Kentish* orchards; but it must needs be, where trees have been planted too deep at first, for want of better skill, which is the reverse of the present management; and therefore I advise all such ground in the inter-spaces, to be sown with clover and fine meadow-hay-feed, &c. in order for making such arable land a good fward.

So also for that wrong notion of planting these trees in hedges, contrary to the rules of good husbandry, as is well known to those occupiers of farms, whose interests are concerned in the returns of their wood and safe fencing, that the thick, tall growth of the hedge is the sole occasion of: now both these great benefits I will prove are in part destroyed by such trees; for,
first,

first, the drip of all heads of trees are more or less pernicious to the under shoots, as they are narrower or broader, and of a good or bad sort; this is often visible in the thicker woods, where the lower arm (as I have said before) and branches are rotted by the shade and fall of water from the upper boughs, so that only the top part of the tree thrives, that enjoys a free air and sun; and thus it is in proportion with all hedge-wood, that is under a tree's shady, dripping cover.

Secondly, the roots of all such trees, by their bigness and extent, have a superior power to imbibe and attract the fertility of the contiguous earth, whereby the underwood is hindered in its growth; and here it is that cattle takes the advantage of such weak, crippled boughs, to make a breach into neighbouring grounds, where in one night's time five or six cows or horses, or a flock of sheep, may do twenty pounds damage; but this is not all, for boys and others generally spoil a hedge to come at the fruit, as being encouraged thereto by this remote planting, and free access.

And for these reasons it is, that many are so far from raising trees (the fruit sort especially) in hedges, that they have destroyed great numbers that have been found planted by their predecessors.

C H A P. VI.

OF THE LIME.

THE Lime, or Lindon tree grows very uniform in rows to a great bigness, where their soil is a good loam, or a loam with a clay bottom, provided it is not in a wettish place, for then it is apt to rot its roots; or if it is a loamy gravel, they will thrive very fast, but not in a sharp, hungry sort, for that will starve their roots, nor in the dry, hot sands; because in the first sort, where there is a strong, sound bottom, they will hold their leaves till *Michaelmas*, but in the two last, they will complain and be yellow a month or two before that time. The male and female have different productions; the male has a small leaf, and a fast, knotty wood; the female grows sooner, its leaves larger, and brings forth fine perfuming blossoms in the spring with reddish shoots, that gives a strong invitation for its planting before doors in towns and country, not only for pleasure but health also, as being a very good cephalick, and assistant to the nerves to those that can enjoy enough of its delicious scents.

It may be propagated by its seeds, sown directly from the tree, the latter end of *October*, or preserved in sand and sown in *February*; or it
may

may be encreased by layers, buried in the earth with their young shoots in *October* or *February*, as the elm is; or transplanted in small sets taken from roots of old trees; or if they are larger, and of a foot diameter more or less, they will grow, provided the heads are cut proportionable to the roots; and this caution affects all trees whatsoever; for if the head is left on when replanted, as was on it at taking up, it must not be expected that the same roots will carry the same head without languishing, if not dying entirely; because in this new situation, the roots have hard work to strike in and naturalize themselves; and therefore they ought to have the help of a light mould, the better to run into, a little or no head, that the roots may shoot the stronger, and transplanted presently, that the air dry not any of their roots.

The lime will not make proper hedges for fields, yet for walks and gardens it will answer very well in a close and beautiful growth, but best of all in fine avenues, at twenty or forty foot distance, and then they will not only make pleasant walks, but also prove a noble shade and shelter from blights and severities of weather; if planted on the east or north-side of a house or garden, as those are in *Asbridge* park, where a long row of tall limes at ten foot distance now grow, that measures three foot diameter at bot-

tom, and were there first set in the year 1660, on a loamy, high ground, under which, about a foot or eighteen inches deep, is a red clay.

This wood is of a soft nature, and therefore used by the heel-maker, carver, and some others.

CHAP. VII.

OF THE CHESNUT.

Horse Chesnut.

I Was acquainted with one that had formerly been a gardener under Mr. *London* and Mr. *Wife*, and lived about a mile from me, who about twenty years ago put some of the nuts of this tree into drills, or holes, in a rich garden mould five inches deep, a foot asunder, and in rows a foot apart; these, after two years, were transplanted into a nursery, in lines two foot distance, and about four foot from one another, first cutting off their downright tap-roots; here they remained till they were seven or eight foot high, and then transplanted where they now are; some of them grow in a circular manner at twelve foot distance, and enclose a piece of ground where carpenters work; the rest were planted close to park pales at ten foot asunder, to serve in

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in time instead of posts to support and fasten them to; for this wood like ash will suffer mortaises in their bodies without complaining, as all the cherry and other gummy sorts will; and although it is but twelve years since their being fixed for good, they some of them are now above eight inches diameter.

The top or leading shoot should never be cut off in standards, only some of the side-ones just before they leaf, may be pruned away to keep their heads thin, and so prevent the wind's damage, that is often fatal to some of the arms of this spalt, brittle wood that I have seen broke off, when almost all others have escaped. But where hedges of this are planted for ornament, at four foot distance from each set, several of their upper buds must be annually cut off with the knife, and not the sheers, to make them grow thick and strong.

This tree is of so quick a growth, that it has been observed to shoot an inch in length in twenty-four hours in all its branches, which was proved by the aforesaid gardener, by tying a stick even with the twig; but this fast running is over after *April* and *May*. They will also grow to a large bigness, as may be seen by those in *Casbiobury* park. They will prosper in our cold country on dry banks, and on mould that

have clay or gravelly bottoms, but best in the richest earth.

In hedge or standards, it is excellent to the eye at the spring, when its clammy, turpentine bud breaks forth into curious, divided, hanging leaves, and bear clusters of beautiful flowers that perfume the ambient air, and after that, a pleasant sight by their great brown nuts.

The fruit of this tree, which is ripe in *October* and *November*, may be rendered still more serviceable than it is. For by the bitterness of its taste, the deer and swine do not care to eat it. To cure which, put them into an old sugar or other cask that is loose jointed, and let it lie in a large pond, or better in a river, two or three days, and you will find the water to have extracted their bitterness, so that they will become an agreeable nutritious food, both for deer and swine, &c.

I shall conclude this subject with an expression from a *Swiss* that I knew, who brought these nuts in his pocket from *Windsor*, that now are fine trees; says he in *French*, *Je suis surpris quand je pense que je porte tous ces arbres a la fois dans ma poche.* That is, "It moves my wonder to think, that I carried at once all these fine trees in my pocket."

Sweet Chestnut.

This tree grows well, but not so fast as the horse

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horse chesnut; and is so much like the oak in sap and heart, that it is hard to be distinguished, and will answer to the same purpose in many things. The laths also of this are sold for the same price as those of oak. A barn of this wood is now standing, as I am informed, at Esq; *Snell's* near *Coney*, that have brought the very carpenter under a mistake in his guess. In *Asbridge* park, one of these trees was felled about fourteen years since, that out-measured all others there in its diameter, and many of them are now growing in *Goffumbury* park by *St. Albans*, and at *Penby*, near me.

In copses they will yield most fine tough poles, that serve for hop-grounds, fork-stales, &c. where if it be well looked after, will in about twenty years get up to a small timber, and return a pleasant ripe fruit in *October*, that now-a-days are in much request either roasted or boiled, and eat alone, or with pork as potatoes are; and in several other fashions. It is a tree that is very hardy, will grow on mould with a clay bottom, or in sandy or other loams, in any cold bleak place, where it will stand firm by its strong tap-roots, and therefore may be made a shelter against the north or east winds, or planted in avenues; and to have it thus answer, its nuts should be sown or planted at the same time, and in the same manner as the acorn is.

If in copſes, then the ground muſt be well manured and ploughed into a fine tilth, and that into furrows, at fix foot diſtance, wherein may be put four or five cheſnuts very near together; then at five foot aſunder as many other ſorts, and ſo forward, and at ſuch diſtances may be put in ſollar-ſets, aſhen-keys, and hazel-nuts in *October* or *February*, firſt harrowed croſs-ways before the ſets are put in; by this method they may be drawn and thinned when at ſufficient heights, leaving only the maſter ſhoot, and will grow, if kept houghed, very faſt, and be fit for felling in twelve years time, if the ground is in good heart; for it is this that governs the after-ſucceſs of this tree, and the cheſnut-poles, as well as good planting and cleaning; there may be alſo left, what ſtandard and at what diſtance is thought fit, always carefully keeping the young trees pruned cloſe to their bodies, that their heads may not ſhade nor drip on the underwood too much; this way is far beyond that artificial one, of keeping the nuts in ſand, and planting in ſpring, becauſe it is freed from the riſque of ſpiring before the nut is put into the ground, and alſo from unnatural tranſplantations; the fruit is preſerved in dry earthen pots, kept very cloſe in a dry, cold place.

The ſap of the ſweet cheſnut tree is whiter, the heart browner, and the grain broader than
an

an oak; by which three signs, it is known from the wood of that tree. This sort of chefnut grows not quite so fast as an elm; but as fast as an ash, and faster than an oak.

C H A P. VIII.

OF THE MAPLE.

THIS is a wood frequently found in copses and hedges, grows in most soils, but best in dry loams, gravels or chalks, and is, for its lightness, whiteness, and diapered knots, excellent for many uses, well known to several artificers.

In a hedge it is accounted a brittle, spalt wood, and apt to fly before the ax or bill, so that there is no such thing as making it in frosty weather; but it has this good property belonging to it, that it will grow with the least rind that is left to its plaish or hambend, of any other.

This wood being of a light, soft nature, is not so profitable to burn as some are. They sometimes made pollards, but make a slow return that way; in standards they seem to do better, because they are not subject to those evils that the pollard is; for this being a soft

wood, is apt to let in the wets after their toppings, whereby their bodies often become rotten and hollow: but they answer the best of all in hedges, because they will here throw up great numbers of encreasing shoots, and where they like, will keep pace with theollar and ash.

This wood is of more value than ordinary woods are, for their diapered knots and curled grain, that have given it the name of the peacock's tail; its white colour and light body also renders it a very commodious sort for stocks of guns, knife-handles, inlaying, musical instruments, &c. but with us, its chief use is, in making trench-dishes, spoons, and several other curious turner's ware; and therefore it is, that the bigness of its body makes it more valuable, which is much hindered and kept back from the time it is made a pollard; nor should it be trimmed up of its sides, for it is by these side-shoots that its fine knots are encreased, which made it in former days in other countries be more valuable than any other wood for tables, &c. which tempted the ambition of great men, to be more than ordinarily profuse in the purchase of those goods and conveniences that were made of it.

It is a tree that does not much damage by its natural head, because it is seldom very large,

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no more than its body ; two foot being a good breadth for this country growth, but in some parts of the vale they grow faster and bigger than in our chiltern ; however, at best it is but a slow grower in all the three shapes of standard, pollard, and stem ; for which reason, I think to stock up several of the latter in my spring wood, to make room for a more profitable sort : And as to its beautiful white, and scarlet keys, I think they are more agreeable in trees, or hedges of walks, or gardens, where that pleasure is more valuable, than in fields that are better furnished by those sorts, which are far more profitable for fencing and fuel.

Where it has room, it exhausteth the ground very much, which makes it but a bad neighbour to some others : it is propagated like the ash by its keys and sets, and at the same time.

This tree, beyond all others that I know of, will run out its sap in winter, and is a sort of almanack to the hedger ; when on cutting its plaish in a hedge, its sap issues from it, and is a token to him, that frosty weather will ensue.

CHAP. IX.

OF THE FIRR.

OF this fort, there were several rows planted about thirty years ago on our green or common, at twenty foot asunder, that now, by the close growth and cover of their heads, make several delightful, shady, cool walks in the hottest time in summer; and also a pleasant sight by their ever-green heads all winter; these have got up thirty foot high, and are eighteen inches diameter of body: Here they flourish on a high, loamy mould a foot deep, under which is a red clay. Also very near me, grows a fine silver-firr before our minister's house, on the same soil, that was planted about forty years since, and is now one of the highest trees in these parts of two foot diameter. This is a most fast grower in this sort of ground, and indeed in almost every other, even in the most northern parts of *Great-Britain*, if its roots have room enough, and its head kept trimmed up as it mounts in height, which will greatly forward its altitude: For it is certain, this and all other trees grow sooner and stronger, where they are free from the encroachment of any other, and can enjoy a full diurnal discharge of their
their

their crude sap, by force of the sun and air's attraction; and not only this, but the whole vegetable kingdom is highly improved, where its subjects have a frank opportunity of nocturnal suction and imbibition of the aerial, terrene, and marine salts, that both the earth, dews, and water plentifully afford, where there is room for their communication; and then the wind will also have a full power to shake their heads, and loosen their barks and roots, whereby a natural perspiration will be the better promoted, which is one main part of a tree's life, and more of its quick growth; for by the winds thus straining the bark, the pores of that spongy substance become more dilated and extended; whereby transpiration of its crude noxious juices, receives a more free and open passage, and easier room for their evacuation; not only by this outward coat, but also by its fruit and leaves, and that according as the heat or cold is more or less: for by the former, the sap is prepared to perspire away by rarefying and thinning its juices; and it is the latter that causes a condensation, and thickens what remains in the smaller or larger veins and vessels. And it is a constant maxim with the woodward, that the greater and higher the head is, the more the trees thrive, for then the
many

many parts of its body bark, as well as that of its arms, boughs, branches, and numberless twigs, are exposed to the potency of the wind's strength, that greatly relaxes and loosens the fibrous and stringy parts of their several barks and roots, that best cause those receipts and issues that nature has ordained for their health and nourishment. I am very sensible, that in entertaining this notion, I dissent from the opinion of some authors, but I cannot go from the query, when I consider that the heads of trees are the most sappy part of them; which endows their barks and most of their small bodies with such hollow, spungy, soft parts, as makes them fit receptacles for their aerial, and aqueous, salubrious subsistence; and that in the greatest summer droughts, when all their heated and dried parts often draw in, and more greedily receive such quantities of the nightly, dewy effusions, as supplies the want of rain for many months together; and which makes a greater lodgment on the leaves, and barks, as they are more or less rough and spungy; for it may be observed, that the rain does not run down the oak and elm, as it does the beech and firr: The reason, I presume, is, that the imbibition is so great in the dented and hollow bark, as stops its currency, which on the smoother ones falls

falls with more velocity; where the bark is rougher, the leaves in some are finer and narrower, as those of the oak and elm are; and though the moss is an excrescence, and better off a tree than on, yet while there, it has a strong retention of the dews and rains, by its velvet, shaggy parts, and helps to communicate the same into the body, and many branches and twigs; and to supply the want thereof, we rub the bark with the back of a knife, hair cloth, or otherwise, till it is dilated, opened and loosened, in order the better to take in and imbibe the air and water.

The leaves also are contracted, and in some measure furled up by the sun's vehement attraction, that by night are expanded for the better reception of the dews; but whether it be the leaves or the bark that most receives the air, dews, and rains, it is certain, they are both concerned as vehicles, to convey them to the roots and many vessels appertaining to the tree. And it is as true that there is a moisture in the fresh, open air, that the spongy parts of all trees and plants imbibe and take in as part of their proper nourishment; and therefore, it is not the juices alone that the roots draw from the earth that supports a plant,
but

but the air also gives it a proportionable help, else a tree or plant kept in a house would subsist there; but the contrary is plain, that such plant or tree would sicken and die if confined from the fresh air; so that though the earth nourishes at the root, it is the air and dews that help in a joint assistance to bring forth and carry forward their growth. This hardy, useful, and quick growing tree, that seldom refuses any situation or soil, except the hurlucky chaulks and dry sands, may be propagated of its seed that are got out of their hard, tough branches, by being soaked in warm water till they open, and then sown in *March* in the place where they are always to remain: But if they are to be sown in a nursery first, and then transplanted, they may be ordered as other seeds are, by raking them in, and covering them with sifting mould half an inch thick over them, and in three years time they may be removed at pleasure, in *July* or *August*: However, at best this is but male-management, and is never so agreeable to the fir and pine, as if they grow where this seed was first sown or set; and this I have woefully experienced in some cherry trees that I transplanted from woods some distance from me, which will never make good trees: First, Because the roots and small fibres

fibres were many of them broke and confused by the mattock and spade in taking up: Secondly, By the air's drying the several parts before I could get them replanted; and Thirdly, By the rot and canker that generally overtakes some of them before they can make their new roots, whereby part of their vessels must be consequently prejudiced, and the tree crippled in its growth ever after.

Or the seeds may be sown broad-cast on well manured and ploughed grounds, and only harrowed, in *October* or *March*; or in straight furrows made by the plough at any distance that is thought proper. And what encourages the growth of this tree, is, its being ready for building in thirty or forty years; and therefore, it is pity plantations are not made of this wood with all expedition on many estates, where they will grow beyond most others.

In *Scotland* they grow in such plenty, that the sheep, &c. browse on their young green shoots, and on loppings of old trees in hard weather, and prove a very sweet healthful food for them; and therefore I should think it serviceable for deer. This tree yields a fine resin and turpentine: A person in the summer-time drove a shank-nail into one of their bodies, and it run out two quarts of turpentine, from one of fourteen inches diameter. The

Christiana

Christiana deals are red hearted with some sap; but the white deals have never any heart: Therefore, it is thought that these are what they tap for turpentine. Turpentine like oil preserves wood.

CHAP. X.

OF THE POPLAR.

THESE aquatics are propagated by suckers, cuttings, or truncheons: by suckers, that may be bedded and planted in fine, hollow mould in copses for trees, in rows ten foot wide, and at twenty foot distance, amongst oaks, ashes, chesnuts, and cherry-trees, and underwood of hazels, fallow, hornbeam, &c. where the soil is clay or loam, proper for its growth; and here it will answer very well, as one of those sorts that seeks its nourishment towards the top earth, and be a natural neighbour to the oak, walnut, chesnut, and cherry-tree; by drawing a different juice out of those many sorts that the earth abounds with, whereby less damage is done to the next tree than if they were all of a sort. By truncheons, or cuttings that may be buried in banks, in watry, marshy places, or by sides of ponds or rivers, where they must be put in at four, eight, or
more

more foot distance, two or three foot into the ground, and about half a one out of it slope-wise ; but if success is expected this way, their bark must never be slipped up at their putting into the earth : This is so much like the asp, that there is not much difference to be perceived ; and these like them grow in our woods, where the ground has a moist bottom ; but they grow best in the watry grounds, for here they have more plenty of their natural food, than on our high, drier lands, and will arrive to a useful bigness in twenty-five or thirty years, that will serve their purposes as the asp will ; for the asp and abel are both a sort of poplar, that grow equally fast in tall, large trees, and are alike encreased, and will suffer any wood to thrive under them, without that damage which most others will produce, because it does not spread (if it is trimmed up) like the oak or walnut ; the leaves also are small, and commonly under such a tremulous motion by the wind, that they have not power to retain the wets, that are often blown off from their high heads, before it falls on his under neighbour. For these reasons, it is a pity that more of these trees are not planted on our loams, as well as in wetter places ; because they bring on a sudden verdant sight and shelter about houses and gardens, as well as in wet meadows and marshes, to a very great and expeditious profit.

C H A P. XI.

OF THE QUICK BEAM.

THIS tree, according to its name, will grow apace, like a beech, in light, chalky soils; but, in stiffer land, it grows more slowly. It makes a pretty show with its silver leaves and red berries; but I cannot learn, that its berries are good for any use. When it grows as a standard, some will run into fifteen or more inches diameter; and, when it is of a proper bigness, it serves the turner for making dishes and other utensils, being a whitish, light, tough wood. The sets may be planted as ash, or the berries, ripe in *October*, may be sown. There are many of these trees now growing in *Hertfordshire*.

C H A P. XII.

OF THE HOLLY.

THIS tree Mr. *Evelyn* prefers before all other *English* winter greens, for its red berries, and large, shining, prickly leaves, and the serviceable wood, that, on many occasions, is made use of; therefore he wonders
at

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at those, who are expensive in foreign greens, and yet neglect the culture of this incomparable tree, which ought to be propagated, not only for ornament, but defence and profit.

This gentleman thought he had a glorious sight by an impregnable hedge, that he had growing in his garden, of near three hundred feet in length, nine feet high, and five in diameter, glittering with its armed and varnished leaves; and the taller standards, at orderly distances, blushing with their natural coral, mock at the rudest assaults of the weather, beasts, or hedge-breakers, nor can any, unpunished, hurt it. There are two eminent kinds; the prickly, and smooth-leaved, or, as some call it, the free holly, not unwelcome, when tender, to sheep, and other cattle: There is also the white-berried, and a golden variegated, which proceeds from no difference in the species, but accidentally, and by sport of nature, as most such variegations do; since we are taught how to effect this artificially, namely, by sowing the seeds, and planting in gravelly soil, mixed with store of chalk, and pressing it hard down, it being certain, that they return to their native colour, when sown in richer mould. With this excellent plant, there might be living pales and inclosures made, as, he says, the lord *Dacres* had, by environing

his park with it in *Suffex*, able to keep in any game, and, cut into square hedges, becomes impenetrable, and will thrive in the hottest, as well as the coldest land. This gentleman used to get thousands of them, four inches long, out of the woods, amongst the fallen leaves whereof they sow themselves, and so plant them; but this should be before the cattle begin to crop them, especially sheep, who are greedy of them, when tender. Stick them into the ground in a moist season, spring, or early autumn, especially the spring, shaded, if it prove too hot and scorching, till they begin to shoot themselves; and, in very sharp weather, and during our easterly winds, covered with dry straw, or haulm; and, if any of them seem to perish, cut it close, and you shall soon see it revive. The lustier and bigger the sets are, the better; and, if you can procure such as are a thumb's breadth thick, they will soon furnish a hedge. At *Dungeness*, in *Kent*, they grow naturally amongst the very beech and pebbles; but, if your ground be stiff, loosen it with a little sand, or fine gravel. This rare hedge (the boast of his villa) was planted upon a burning gravel, exposed to the meridian sun; but true it is, that time must bring this tree to perfection, it does so to all things, and we must work for posterity. But what if a little culture

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culture about the roots and frequent stirring of the mould would double its growth? We stay seven years for a tolerable quick; it is worth staying it thrice for this, which has no competitor. Yet there is an expedient to effect it more insensibly, by planting it with the quick: Let every fifth or sixth be a holly-set, they will grow up infallibly with your quick; and as they begin to spread, make way for them, by extirpating the white thorn, till they quite domineer. Thus was the former hedge first planted, without the least interruption to the fence, by a most pleasant metamorphosis. But there is also another, not less applauded, by laying along well-rooted sets (a yard, or more, in length) and stripping off their leaves and branches; these, covered with a competent depth of earth, will send forth innumerable suckers, which will suddenly advance into a hedge. The timber of the holly (besides that it is the whitest of all hard woods, and therefore used by the inlayer, especially under thin plates of ivory, to render it more conspicuous) is for all sturdy uses; the mill-wright, turner, and engraver prefer it to any other: It makes the best handles and stocks for tools, flails, riding rods, carters whips, bowls, shivers, and pins for blocks: It also exceeds for door bars and bolts; and, as of the elm, so of

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this especially, they made even hinges and hooks to serve instead of iron; and, of the bark, is made the best sort of bird-lime. In 1738, being then at *Canterbury*, I was in company with an ingenious cabinet-maker, who told me, that, if the holly is to be used for inlaying, it must be cut out green, else it will spot, and cut out thin, even as for fanneer, This wood will inlay white and black; to keep it white, after it is cut out, they throw some brimstone into a fire, and hold it over it: To keep it black, they throw it into a dyer's furnace, and then it makes beautiful work, by alternate lays of it. Accordingly, both joiner and cabinet-maker, whip-maker, mill-wright, and others, buy this valuable wood, that, when used thoroughly dry, is of long duration, and great service. There are some holly-trees, that measure greatly in their bodies, and are now more and more propagated for the fore-mentioned uses, and growing and cutting them into pyramidical and other shapes. Some of these trees I have now growing in my hedges of the ploughed fields.

C H A P. XIII.

OF TRANSPLANTING GREAT TREES
WITH SUCCESS, FELLING TREES, &c.

IN summer, make a pap of the earth with water, that the tree is to be planted in, and at, or towards the top, lay straw, or fern, between a shallow covering of mould, to receive and hold the rain, and become a sort of watering pot. In winter, a little before the hardest frosts, make a square trench about your tree, at such distance from the stem, as you judge sufficient for the root; dig this of a competent depth, so as always to undermine it, by placing blocks and quarters of wood to sustain the earth: this done, cast in as much water as may fill the trench, or at least sufficiently wet it, unless the ground be very moist before. Thus let it stand, till some very hard frost do bind it firmly to the roots; and then to the pit, prepared for its new station, which you may preserve from freezing, by laying store of warm litter in it, and so close the mould the better to the straggling fibres. But, if the mould and tree be over heavy, it may be raised by a triangular crane with a pulley, by which such great trees may be weighed up and conveyed on a trundle, or slide, to the

place where it is to be replanted. By this may be removed trees of a wonderful stature, without the least disorder; and many times without topping or diminution of its head, though our common way in *Hertfordshire*, and all other places I have been at, is, to cut off so much of the tree's head, as will make it in proportion to the roots that are to nourish it. Mr. *Houghton* says,—To transplant an old tree, was a proverb of a difficult enterprize: yet, it is recorded, that count *Maurice* a governor, planted a grove, near his palace, in *Brazil*, containing six hundred cocoa-trees, of eighty years growth, and fifty feet to the nearest bough, that he waisted on floats and engines four miles, and planted them so luckily, that they bore abundantly the first year. He gives several instances of such success, particularly one, done by a great person in *Devon*, who transplanted oaks, as big as twelve oxen could draw, to supply some defect in an avenue to one of his houses.

Felling.

Some advise, that four or five be suffered to stand very near to one another, and then to leave the most prosperous, when they find the rest to disturb his growth; others are for never planting a timber tree nearer than forty feet distance, where closest, especially of the spreading kind.

Trees

Trees of ordinary stature, transplanted (being first well watered) must be sufficiently staked and bushed about with thorns, or something better, to protect them from the violence of winds, rubbing of cattle, or such like; till being well grown and fixed (which may be in seven years) they will be able to withstand all accidental invasions; therefore, for timber trees, cut off no heads, nor be too busy with lopping; but for shade, fuel, or otherwise, lop off from their tops unthriving branches only: if you intend an out-right felling, stay till *November*, else the sap not being perfectly at rest, the worms will breed there. But for the chimney you need not be so punctual; (if this last is Mr. *Evelyn's* notion, I must make bold to dissent from it, in the particular of the beech tree, which ought to be felled in the middle of summer, that the sap being then at the thinnest, may leak out, and the tree be better preserved against the worm, which is what breeds it, and causes a swifter destruction in this wood, than in any other.) The best time of felling is, just before they begin to decay; but such, as appear decaying, are first to be cut down, and then those that are approaching to it; but the plain thriving indulged till the last. The best way to know the state of a tree, is to bore with a middling piercer, made augre fashion, and to examine what substance

stance comes by the frequent pullings out. Some will pronounce shrewdly the state of a tree, by digging about the roots; and when a tree perishes at top, it is ever a mark of a great decay in the tree's roots. There is also a swelling vein, which eminently discovers itself above the rest of the stem, although invested with bark like the rest, and which frequently circles about the tree like ivy, which is an infallible sign of hollowness. The time for this destructive work, is about the end of *April*, (when the bark of the oak arises freely) although men greatly differ: but, without doubt, while the trees are overmoist, they are not so fit for the axe, for they are more obnoxious to putrefaction and the worm: wherefore, it is advised, before a fall, to make a gash to the pith, that the whole moisture may extil; for the vessels, that ascend in the bark, are called the arteries, and those, that descend in the trunk or body, are the veins, according to Dr. *Grew*, and *Malpighius*, two learned members of the *Royal Society*. Yet may not such a gash be made, as to damage the timber, otherways than that of cutting or sawing the tree down at its bottom; which, as it is the common way of felling a tree, it will answer our intention so far. But there needs no stress to be laid on this management, where the oak is to be sawed into planks or boards, and then soaked for a fortnight in water; because this way

way is a far greater security against the worm than the other, as of late has been discovered, by many repeated experiments, as well in my own practice, as that of others; and which was not known in Mr. *Evelyn's* and *Houghton's* days, so well as it is now.

Survey your woods as they stand, immediately after *Christmas*, and then divide the species in a note-book, and consider for what purpose every kind is most useful; after this reckon the bad and the good together, that one may put off the other, without picking the wood, as Mr. *Evelyn* has very well observed in his *Sylva*. This done, learn the several market-prices, as what so many inches square, or long, are worth, or by the foot, for the several trades and uses that they are necessary for. As suppose it were an ash, to set apart the largest for the wheel-wright, and the smallest for the cooper, and that of ordinary scantling for the ploughs, and the brush to be made into kind-faggots, and so all others: or you may mark out such as you intend to fell; and then begin your sale about *Candlemas*. Being now entering with your workmen, one of the first and principal things, is the skilful disbranching of the bole of all such arms, and limbs, as may endanger it in the fall; therefore, in a very great arm, chop a nick under it, close to the bole or body, and so meeting it with the down-right strokes, it will be severed

severed without splitting. In trees that are called the male, the wood is much harder than the female. If you design a fresh growing from the roots, fell your tree as close to the ground as possible; besides, the longer the stick, the better for many uses. Some will not cut a seedling oak, so as to have any thing grow from its roots, because they say it produces a reddish wood, not acceptable to the workman; and that the tree, that grows on the head of its mother, does seldom prove good timber. It is observed that one foot of timber, near the root, is worth three farther off; especially in that of ash, which, of old, has been accounted the toughest and most serviceable, particularly for making broad hoops. If it be a winter fell for fuel, cut no more of the head in one day, than the cattle will eat in two; I mean, of browse-wood; and when that is done, set it up an end as soon as you can, to preserve it from rotting. But as to the debarking of the oak in the common season, the method of doing it is by peeling-irons. Lay up your sawed timber very dry in an airy place out of the sun, or wind, and laying along one piece upon another interposing some short blocks, to preserve them from mouldiness, which they usually contract, while they sweat, and which frequently produces a kind of fungus, especially if there be any sappy parts remaining, that were not extracted by water,

When

When you submerge your timber, planks, or boards in water, lay them afterwards upright in the sun and wind, so as it may pass freely through them, and turn them daily. This done, new sawn boards will floor better, than many years dry seasoning. But, to prevent all possible accidents, let the joints of your floor be shot, fitted, and tacked down, only for the first year, nailing them for good the next, for thus they will not in the least shrink. Among wheelwrights, the water seasoning (which hinders the exhaling of the alcali salt in it, causing the hardness) is of especial regard. The *Venetians*, for their arsenal provision, lay their oak some years first in water, while the *Turks* fell at all times; therefore, though they have excellent oak, it decays in a short time, by this only mismanagement. Some commend burying it in the earth, others in wheat; and there be seasonings of the fire, as for the scorching and hardening of piles, says Mr. *Houghton*; but I think, I have sufficiently exposed the damage scorching does to timber, when it is done so hastily, as to cause rends and cracks in it, as the late common way has been, through mistake. Indeed, where such pains are taken (like the *Venetians*) to roast it gradually, so as to prevent cracking, it may be of great service to piles and posts; but so much trouble, I presume, will hardly go down with the *English*.

Timber

Timber is esteemed best that grows most in the sun, and on a hale dry ground; for those trees, which suck least, are hardest, and longest lived: The climate contributes much to its quality, and the northern situation is preferred, although there are some exceptions. It is noted of oak, that the knots of an inveterate tree, just where a lusty arm joins to the stem, are as curiously veined, as the walnut. The more odoriferous trees are reckoned the more durable; and yet well-seasoned oak may contend with any, if preserved constantly wet, or constantly dry. The two sorts of laths, allowed by statute, are, one of five, the other of four feet long, because of the different intervals of rafters: The first has an hundred to the bundle, and the last an hundred and twenty; and to be in breadth one inch and an half, and half an inch thick; of each of which sorts there are three, viz. Heart of oak, sap-laths, and deal-laths, which also differ in price. The heart of oak are fittest to be under tiling, the second for side-walls, the third for ceilings, because they are straight and even. The different strength of woods has been proved by breaking them with weights; and, in the lead-mines of *Mendip Hills*, pieces of the thickness of a man's arm have supported ten tons of earth.

B O O K XXIII.

MISCELLANEOUS OBSERVATIONS.

C H A P T E R I.

O F T H E F U R Z, O R W H I N S.

ALTHOUGH this vegetable is deemed only a shrub, or weed, yet, for its many excellent uses, it deserves our closest regard; and therefore I shall here bestow a chapter upon this most serviceable plant, and endeavour to persuade to its propagation, by shewing the great improvements that may be obtained by it, and that in a more particular manner, than any author whatsoever has hitherto done. Furz is the most common and cheapest fuel, our *Hertfordshire* commons afford, when got in dry. It burns very furiously at one lighting, so that it may be truly said, that this, and fern, burn the quickest of strong fires, and is so much coveted, that at *Ivinghoe*, *Berkhamstead*, and many more commons, they will not give it time to grow above
a span

a span long, before they cut it with their sweeping, destructive, two-handed bills and scythes; contrary to which, in *Suffolk* and *Norfolk*, they let their furz (called here whins) grow, like a coppice-wood, eight or ten feet high, before they cut it for fuel off their sandy grounds, which is certainly the best husbandry; for then the stalks will become durable firing, and on several occasions, supply the place of wood, or coal. But furzes on our commons, are imprudently cut all the year to sell: in others the parishioners are stinted, and not suffered to cut them but once in so many years; or, if every year, at a certain season, and then only so many faggots to each house, as are sufficient, according to the by-laws of a court-leet, or court-baron; by which the furz has time to acquire a tall, thick head, to their great encrease and the people's benefit, as it is annually observed on *Frithefsden* common, near *Gaddefsden*.

In others, as on that of *Busby* common, they are confined to use only one particular short cutting bill; for, where any sort is used at pleasure, they are ready to chop up part of the very roots to the great destruction of this serviceable shrub. With us, several cut young furz in the summer-time, and hay it for grinding it, as tanners bark is done, in order to give it as manger-meat to horses; for, by this method, it
is

is softened to their mouths. Others think furz so considerable an improvement to some poor sort of land, that they plant it even in inclosures, and cut it to great profit once in three years; for this, in some good ground, will pay very well; will grow where hardly any thing else will, and that in almost any soil whatsoever, without any other charge than workmanship, as may be seen in *St. Margaret's*, in *Ivinghoe* parish, and in many other places, notwithstanding the several furz-commons, that lie in the adjacent parts. Furz, indeed, may be cut all the year; but, when they are cut young in the summer-time, they will be so weak, as hardly to prick your fingers; which though too frequently done, yet is it a most wretched piece of husbandry, because they deprive themselves of much of the quantity they otherwise would have, had they longer growth; which is one extreme: the other is, when they are let to remain to too great an age, as seven, or more years; for then they often die, where they stand, as I observed in my progress through *Suffolk* and *Norfolk*, in the year 1736. They are also killed by severe and long frosts, as was experimentally proved in the very hard winter and spring seasons, 1740, to the detriment of many poor families; for this plant runs very shallow in the ground, and therefore so exposed to this misfortune, that it was

very difficult to cut an hundred furz faggots, the following summer, off that great tract of land, *Barkhamstead* common.

There is a wild sort of furz, that is small, and grows in commons; and there is another sort, called *French* furz, that grows into a large tall substance. Where the latter grows singly, and has air enough round it, it will run but ten feet high, in a deep soil; but, where the surface is shallow, not so big. If there be a rock of stone under a four-inch staple of mould, or if there be a red clay under a thin coat of loamy earth, it will flourish; but it will not bear the drip of trees, for that often kills it. It is a common way in some places, where they rightly manage it, to cut one parcel at four or five years growth; the next year another of the same age, and so on successively. If horses, cows, or sheep are permitted to browse and crop its tender first shoots, it will much retard its growth. Its seed is in its full extent and ripeness, the beginning or about the latter end of *August*, which may be known by its blackness, and easy parting from its yellow pods. Then it is they put on a pair of strong gloves, and strip off the seeds with the prickles about them, which they lay on a blanket or sheet; and the furz-seed, by only the heat of the sun, will jump out of their pods or kids, and then may be separated by sifting, screening, fanning,

ning, or otherwise. The season for sowing furz-feed is in *March* broad-cast, or in drills very thinly in a fine tilth, so that each plant may stand about a foot or eighteen inches asunder: if the first way, it may be harrowed in with iron tines, or with a bush harrow; if the second way, a drill may be made with the three-wheel drill or pulley-ploughs, double-breasted ploughs, or with the *Hertfordshire* wheat, or pea-stitch plough, or with the hough, and covered with the harrow or hough.

A third way is, to raise a bank four feet high, and four or six broad; on the top of which make one or two drills at a foot distance, and sow your seed thinly in the same; and, if it takes well, it will make an admirable profitable and secure fence against men, or beasts; for here even Mr. Huntsman must ride about to follow his chace, as may be perceived by that charming furz-hedge, now growing on a sandy, loamy bank, between *Warmer* and *Deal*, in *Kent*, which keeps the corn and grass in constant safety, much beyond our common wood hedges. A fourth and last way is, to pull or dig up young furz-plants off a common; or if you split them off their old stalks, and plant them in a raised bank, as it is making, one row of them twelve or twenty inches high above the other, in the spring, or in *October*, they will quickly grow and flourish, provided

you make a ditch before them, and plant the sets in the same earth, as it was excellently well performed in a sandy loam, lying between *Leighton* and *Wooburn*, in *Bedfordshire*, in the year 1740. But, if you will destroy a furz plantation (which is very difficult to do) where the ground is not too stony, and where trees do not grow in the same, you may make use of a strong wheel or foot-plough, with six, eight, or ten horses to draw it, and it will cut up and eradicate most or all of the furz-roots; and, by repeating this work one or two summers at most, you may clear the earth of them in the cheapest manner, and thus prepare it for sowing corn, or laying it down for meadow; which to improve, the roots, with some mould over them, may be planted in small parcels, and burnt to make ashes, that will, if sown over the seeds of corn or grass, so fertilize them, as to bring on a speedy, plentiful growth. Furz is very profitable, when made into faggots, and laid at the bottom of corn and hay mowsteads, because its prickles will keep off the harbour and breed of rats and mice, and thereby preserve the corn from the damage of damps, and from being eaten by great numbers of these vermin, which, to the small farmer, in some years, prove such a pest, as to eat up great part of his wheat and oats.

Furz

Furz is likewise very valuable to kiln-men for burning bricks and lime, which it will do rather better than wood; accordingly those about *Gaddefden* make a great consumption, every year, of this plant, that employs a considerable number of poor men in the cutting and felling it. This serves, in snowy seasons, for the cattle to browse on, for they can come at this, when grass is covered; at other times, in frosty weather, they find a bite under and about the furz, when no grass is to be got elsewhere. In our country, we generally make use of furz, to brew and wash with, and sometimes to lay over a hovel ridge-fashion, which, when a thin coat of straw is thatched on the same, will keep out wind, and all weather, a long time. But I must here enter a caution: that whereas furz, when very dry, burns so quick and furious, that it is very dangerous to lay a great deal of it near a fire-place, or where a candle is commonly used: of this a landlord was so timorous, that he obliged his tenant never to suffer a furz faggot to be brought into his inn, a large house on *Gaddefden-Green*: and by woeful experience, I can say, that great part of my dwelling house was burnt down, in the year 1724, and also three of my neighbours entirely consumed; by means of a spark jumping from a smith's anvil through a crevice, among some furz.

C H A P. II.

THE IMPROVEMENT OF WHEEL
CARRIAGES.

I Have, says this author *, been diverting myself with drawing up reasons, to shew, that coaches, waggons, and other four-wheel carriages, whose fore wheels are less than the hinder ones, go easier, when the weight, contrary to common practice, is laid on the hinder wheels.

First, Because the fore wheels cut the road, and then the hinder wheels follow in a track ready cut and smoothed for them. This reason is vastly strong in frosty weather, or soft ground: But it has great strength, even in summer-time, and dry roads; for then the clods fall into the ruts, which will be all broken by the wheels that first go over them. But it is plainly easier for the hinder wheels to carry the load, where the ground and clods are cut and broke for them, than for the fore wheels to do both offices. Country-men reckon there is one horse's

* A quotation of *Ellis's*; but the paper being scarce and curious, I insert it.

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horse's draught difference, between going first and second in a road; and, therefore, they always strive to let some cart go before, to draw the road.

Secondly, The fore wheels will cut deeper into the road, than the hinder wheels will do, with the same weight upon them; because, the broader or longer any thing is, the less way will a weight press it into the ground; but the hinder wheels, being larger, must make a longer hole than a short one: Therefore the same weight will not crowd the hind wheels in so deep, as it will the small ones. And many times it will happen, that the fore wheels, if the weight be upon them, will cut in, when the hinder wheels, if they carried the same load, would not cut at all, but run upon the nail. But, if the weight be so great as to make the hind wheels cut in, then, the first reason comes in to ease them, *viz.* they will run into a track ready cut for them. Besides, How very hard must the fore wheels come loaded, when the ground is so soft, that the axle-tree, or nave, slide upon the ground, and sometimes drive the ground before them? Whereas, if the weight was on the hind wheels, the fore ones would not sink in so deep, and the hinder ones, being higher, would trip after them, clear of the dirt.

Thirdly, Every one knows that a power, applied at the end of a long lever, will raise a weight easier, than at the end of a short one. To apply this to the case of a coach or waggon going up hill, or getting out of a hole, or drawing over an obstacle in the road, which are all one and the same thing : Now the length of the spoke, or distance from the ground to the axle-tree, may be called a lever, which being longer in the hind wheels than in the fore ones, the same power, applied at the axle-tree of the hinder wheel, will have a greater force than at the axle-tree of the small wheel.

Fourthly, It is certain, and well known, that a power, applied to a lever at right angles, has a greater *momentum*, or force, than if applied obliquely on either side. To apply this ; all coaches and waggons have their fore wheels so low, that the harness, or shafts, are lower, where they are fastened to the coach or waggon, than the horses breasts ; consequently the horses draw, not horizontally, or at right angles, but upwards ; that is, part of the weight or load, hangs continually upon their breasts, or necks. The lever of a wheel, which is the spoke or distance from the ground to the axle-tree, stands perpendicular to the ground ; the power, that would act with the greatest force, should be

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applied

applied horizontally, or level with the ground; but, the higher the wheel is, the nearer to a horizontal direction would the power act: Therefore, a power, applied to the great wheels, brings them on easier than the small ones.

Fifthly, When the fore wheels, with the weight upon them, are in a hole or flough, the foregoing reason has great force, because the horses then draw more upwards, or further from right angles, than when the coach or waggon went upon level ground; and consequently, a greater part of the load lies upon their breasts and necks. What I would add, to lay the load upon the hinder wheels, is this: When the fore wheels, with the weight upon them, are in a hole or flough, the wheel-horses in a coach, or in a waggon the shaft-horse to be sure, if not the next horse to it, are in the flough too, which are the best horses in the team; that is, they are where, by reason of the badness of the ground, they can do the least good: But, if the weight be upon the hinder wheels, the fore wheels will easily run through the flough, because they have no weight upon them, and, by that time the hinder wheels are got into the flough, the horses will be all got out, on firm ground, where they can exert their strength the better, will draw more horizontally, have a longer lever to pull at, and a
passage

passage made through the dirt, for the hinder wheels to run in.

Sixtly, If all the foregoing reasons were annihilated, or had no force in them, which yet, to me, seem to carry demonstration in them, there is still another reason, which would alone prove, that a coach or waggon follows the horses, when the load is upon the hind wheels, with half the labour that it would do upon the fore ones; and that is this, while a wheel is turning round once, all the parts of the fur or box in the nave rub against the axle-tree; the horses work is, to overcome this rub or friction. To make it easy, it is daubed with grease. The fur or box in the hinder wheels, is no bigger than the fur or box in the fore wheels. Now, if the hinder wheels be as high again as the fore ones (as they commonly are in coaches, though in waggons not quite so much) the rubbing round the fur or box in the hind wheels, if as high again, go as far with once turning round, as the fore ones do at twice turning round. This proportion is nicely true in coaches, and in waggons three to two; or the horses in a waggon would carry a load upon the hinder wheels three miles, with the same labour as they would do two miles upon the fore ones. But, when the foregoing reasons are
added

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added to this, the labour of the horses is lesser still a great deal.

Seventbly, There are, in all roads, but especially in ground that is full of ant-hills, or in frosty weather, or in crossing ruts, or in summer-time, where the ground is rough and hard, a great many holes, which the fore wheels, being small, will go to the bottom of; but the hind wheels, being of a larger compass, will only touch the sides, without going down to the bottom; and consequently, not sinking down so deep as the fore wheels, are easily drawn over.

Eighthly, It has been commonly believed, that the nearer the hind wheels are to the fore ones, in a waggon, or the shorter the carriage of a coach is, the easier it is for the horses. But what follows will prove, not only that the load ought to be upon the hind wheels, but that the further the hind wheels are from the fore ones, and the longer the carriage is, the better it is, both for the horses and riders; for the horses, that are in the shafts of a waggon, are most barbarously thumped this way and that way, by the shafts, when the load is upon the fore wheels, just at his tail; but when the load is upon the hinder wheels, and they as far off as possible, the motion of the fore wheels will be much easier against his sides, because there is no weight upon them, and the draught

draught of all the horses will keep the fore part of the waggon steady, and the motion of the hind wheels will be almost lost before it reaches the shaft-horse.

Ninthly, The longer the distance is between the fore and hind wheels, or the longer the carriage of a coach is, the easier will be the turning out of the road, or into a yard, or another street; because the length of the waggon or carriage may be called a lever, and the longer that is from the hind wheels, which carry the load, the less power is required.

Besides, for it would be endless to count the reasons that may be given in so plain a case, it is the safest way to prevent overthrowing; for, when one of the fore wheels, with a load upon it, goes into a hole, it falls down with a great force, the coach, or waggon, stands as it were upon its head, and easily brings over the hind part, because it is light and near; but if the load be removed to the hind wheels, and they at a good distance, then the fore wheels, dropping in a hole, could not so easily draw over the hind part, because it is now heavy, and further off. And, if one of the hind wheels, with the load upon it, falls into a hole, it cannot draw over the fore part, because the draught of the horses will pull it down, or, rather, keep it from rising up.

And

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And again, a coach, or waggon, is in little danger of overturning, unless a hole be so long as to take in both the wheels in the same side, at the same time; for, if the hole be not so long, then, when one wheel is in the hole, there are three stand level, and by that time the hind wheel comes to the hole, the fore wheel is out, and then there are three stand level again: So that, the further the wheels are from one another, the better chance you have, not to have the wheels on one side in a hole at the same time; that is, of not being overthrown.

I will give you one reason more, and that is, a coach will go a vast deal easier to the persons that ride in it, for having the carriage long; for the shocks will not come so quick, nor be so great, nor so many; for, when the hind wheels are at a good distance, and the coach hangs as near them as possible, the motion of the fore wheels will be scarcely felt. When one of them goes into a hole; there will, by reason of the distance, be perceived, in the coach, only a gentle sinking on that side, or, at most, an easy swing, which will give the riders no trouble, but rather pleasure.

From these reasons, it follows, contrary to the common practice and opinion, that, the
longer

longer the carriage of a coach is, the better it is, both for the horses and the riders.

That the coach ought to hang as backward, and as near the hind wheels, as possible.

That no heavy carriage should be put into the boot, under the coachman, but all boxes, portmanteaus, and servants should be behind; not between the back of the coach and hind standards, but upon a board, beyond the hind axle-tree; because what load is placed there, will help to poise up, or lessen the load upon the fore wheels.

That the fore wheels ought to be as high as the convenience of turning will allow, and what is wanting, in the height of the wheels, ought to be remedied, as far as it can, by raising the hamel-tree so high, that the horses may draw as near to a horizontal line as possible.

In waggons, the fore and hind wheels should be placed as far as possible from one another.

That a long ladder should be behind, and never any before, that the greatest part of the load may be laid upon it, beyond the hinder axle-tree; and, if any part of the waggon be empty, let it be the fore part.

The shafts, or sharps, should be raised, where they are fastened to the waggon, rather higher than the horses breasts or shoulders, that so the horses may draw in a horizontal line, even
when

when the wheels are in ruts, lower than the horses feet.

Country-men object, that, if the load be upon the hind wheels, the waggon will come harder, because the load will be the further off from the horses; but I must tell them they are mistaken. If there be any force in the reasons I have given, instead of coming harder, it will come easier, and then reason is against them; and experience confirms my reasons, as may be seen by drawing a small waggon, with a line and weight over a pulley. They urge, that a weight, at the end of a cart-rope, drawn over wheat-ricks, would come hard. Yes, I suppose it would, but what is this to the purpose? In this case, no wheels are used, and therefore the cases are different; besides, I have not said one word, that the horses should go a great way, the length of a cart-rope, before the coach or waggon; and, therefore, this is nothing to the purpose of what I have said: However, I will speak of this by and by.

But their grand objection is their own experience: When the fore wheels of a waggon are fast in a hole, they take some of their fore horses off, and hang them upon the shafts, and then they can draw out: from whence they think it plain, that, the nearer the horses are to the load, the more force they have. But
they

they forget what was said in my fourth reason : That, as coaches and waggons are made now, the horses draw upwards ; and that part of the load hangs perpetually upon the horses necks, or breasts, even when the waggon goes upon level ground : And that, when the fore wheels are in a hole, the horses draw more and more upwards, or less forwards ; and, therefore, the horses do not so properly draw the wheels out of the holes, as lift them out ; they lift the waggon up by their necks. The country-man is apt to praise his horses, how bravely they stooped at their work, and took the waggon out of the hole. Yes, they must needs stoop with such a load upon their necks, the weight oftentimes pulls them down to the ground ; the chafing of their necks tells, what a load they bear. But the method here proposed, the laying the load upon the hind wheels, would prevent their lifting the load at all, and make the wheels come easier through the hole too. I think this is very plain ; but still the country-man will hardly believe it : He has so long and so often heard, that, the nearer the horses are to the load, the more force they draw with, that it will be very hard to get it out of his head. What will he say to me, if I should tell him, that, where horses draw upwards, as they do in all coaches and waggons,

the

the further the horses are from the load, the more force they draw with: If this startles him, and he do not understand it, I would fain have him observe his child playing with a little cart or rather a waggon, because it has four wheels; when a little boy has loaded it with dirt, or stones, he does not, as the country-man thinks he should, take hold of the string close to the waggon, because he would find the weight of the waggon lie heavy upon his arms, as I said before it does upon the horses necks; nay, he would even lift the fore wheels up from the ground; but he gets to the end of this line, as far off the waggon as he can, because there he finds it come easiest. If, indeed, at any time the fore wheels drop into a hole, where he cannot drag them out, then he comes up to his waggon, and takes short hold, that he may lift his wheels out: As soon as that is done, he runs to the end of his string again, without taking any care for his hind wheels; these, he knows, will come on, though the greatest part of the load lies upon them. If the country-man would vouchsafe to play a little with his child's cart, he would find, and feel, all I have said to be true. Strange! that he himself should be a better carter, when he was a child, than he is now. The case is the same, if the draught be downwards, the further

the horse or man is from the thing drawn, the greater is the force: As in pulling a rope fastened to the top of a timber-tree, when men are felling it. If the country-man's notion was true, that the nearer the drawer stands to the tree, the more force he draws with, then they, that pull at the rope, ought to stand close to the tree, at the bottom of it; but they would have little or no force there; and, therefore, we always find they get as far off as they can, to the very end of the rope, not so much to avoid the tree's falling upon them, but because, the further off they get, the more force they pull with: The reason is the same as before.

I would willingly set the country-man right, in one notion more, which shews his great ignorance, and is a monstrous piece of barbarity: He thinks that the shaft-horse, in a waggon, bears no more weight on his back, than the weight of the shafts only; and that every horse, that goes before him, draws horizontally, but the horse, in the shafts, bears upon his back the force of two horses pulling him downwards. The same may be said of every other horse; but the united force of all the horses, every horse pulling them lower and lower, must make a monstrous weight upon the poor shaft-horse's back, enough to break it,
or

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or press him to the ground : And what shews the ignorance of the country-man is, that all the force, with which all the horses draw the shafts downwards, is lost from the waggon ; what is exerted, in pulling downwards, is lost from pulling forwards. But, if the waggon-maker would be so wise, as to fasten the shafts to the waggon, as high as the horses shoulders, the poor shaft-horse would be eased of his load ; and every horse would exert all his strength, in drawing the waggon forwards ; but at present this load upon his back, and the thumps and bangs against his sides, occasioned by the load's lying on the fore wheels, is intolerable. Though I have here spoken to waggoners only, I would not have coach-men think themselves unconcerned in this reasoning. The lowness of that cross piece of wood, to which the wheel-horses in a coach are fastened, which I call a *hamel-tree*, and the loading the fore part of the coach with boxes, occasion the horses a vast deal of needless labour, and pain too, from the pressing of the pad hard against, chafing their backs : It cannot be expected, that waggoners and coach-men should think much of these things. It therefore concerns the owners of waggons and gentlemen to take care, so to order matters, that their horses may do their work with the greater ease.

C H A P. III.

OF LETTING A FARM.

MICHAELMAS is the usual time for a tenant to commence paying rent, though his entrance on the fallow is at *Lady-Day*; which interval is to give him an opportunity of quitting the farm he leaves, in a regular customary manner, and ploughing up and preparing the ground for sowing it with wheat the next *Michaelmas* season. And as profit and satisfaction are expected by the landlord as well as the tenant, in the letting and taking a farm, it highly concerns them both, to insure both, as much as in them lies, at the beginning, while it is in each other's power; for right reckoning (according to the old proverb) makes long friends. Now as this is to be done no other way, than by entering into such mutual agreement, under the covenants of a lease, as may answer these great ends, I shall here offer some hints relating to the same, as follows, viz.

Heads of Articles.

Tenant. Reserving to the landlord all timber and timber trees, and young trees, or shoots of any trees whatsoever, free of any cutting or lopping by the tenant, all the whole term.

* *Landlord.* Have power to cut down, and carry away the same, doing no damage to the tenant.

Tenant. Not to plough up any pasture-ground without paying the sum of forty shillings for every acre over and above the rent, and so proportionably for a lesser or greater quantity than an acre. Rent eighteen pounds a year, payable half yearly, at *Michaelmas* and *Lady-Day*. Tenant not to cut or fell any of the underwood, or make any of the hedges, or hedge-rows, or lop, or top any pollard trees, under the growth, nor above the age of nine years; and then the tenant is always to scour up the ditch, or ditches, where any are, and to leave, before all the new-made hedges, a sufficient dead hedge, a row of hurdles, stakes, and rails, or any other able fence, for a due security against any injury by cattle.

Landlord. To put the premises in repair, and the tenant to keep the same all the term, leaving them in good repair at the end of the term.

To find rough timber for repairs all the term, and the tenant to fetch the same at his own cost and trouble, within four or five miles of the premises,

Tenant. To spend all the stover upon the premises, and particularly all the land, that he cross-crops in the last three years, he shall well

dung or drefs; alfo the laft fallow fhall be fowed with clover grafs, and left in the fame manner as he found it, when he firft entered.

To pay and difcharge all taxes, and rates, as fhall be accounted tenant's taxes.

To keep the ftyles and gates in repair, at his own coft, and to leave the fame fo.

The dwelling-houfe, orchards, and gardens, are to be excepted out of this lease, to which the landlord, or any other under him, fhall have free accefs, at all times, and quiet poffeffion.

Landlord. To have the liberty, all the time, to keep fix hens, and a cock, and their chickens, in and about the houfe and farm-yard; and, at the end of every harveft, the landlord to turn a pig or hog into the stubble, till *Chriftmas*.

Whereas there is a freehold inclofed field in the premifes, containing five acres, more or lefs: now, in cafe the landlord requires fix poles of this ground, lying in any part next the garden, he fhall, at any time, have the liberty of inclofing the fame to his own ufe, he allowing the tenant an abatement of rent in proportion, for the fame.

Tenant. The tenant fhall not gather any ftones off the premifes, to fell, all the time.

To have quiet poffeffion of the premifes from the landlord, during the term.

Not

Not to assign over the lease to any person, without the consent of the landlord.

Landlord. The copyhold is let for three years, and, when the first three years are expired, for three more; and, at the end of them, for three years more; and, at the expiration of them, for three years more, till twelve years in all are expired, and no longer. To commence from *Lady-Day* last, 1741, and to leave all the premises in good heart and order, as he found them.

Observations on the heads of these Articles.

Here I am to observe, that the ground mentioned to be demised, or let, I suppose, was joining to, or lay near the land of this tenant, who rented a farm in the adjacency; so that he had no occasion for the dwelling-house, or gardens here excepted; and as the whole consisted partly of copyhold, and partly of freehold fields, the articles are drawn up accordingly: again, as to the tenant's commencing at *Lady-Day* to pay rent, it is unusual for the foregoing reasons; and what induced him to do it was, I conceive, because the fallow was sown the year before with clover-feed, &c. or he might buy the green growing crop on the ground, and so enjoy the profit of all the land from the time of entrance. About *Gaddefden*, tenants are seldom obliged to do any thing to the farm they rent, more than

finding straw for thatching barns, hog-sties, or other outhouses, and always enter on the fallow ground at *Lady-Day*, and begin to pay rent at *Michaelmas* following, for the whole. But, by these articles, I do not pretend to lay down a general rule for leases, because they were calculated on a particular account; for there are many reasons for causing various articles to be inserted in leases, according to the nature and custom of the country the land lies in. Those articles proper to be inserted in the lease of a farm in the chiltern country, are improper for one in the vale, and both very contrary to one situated in marshes or fens: for example, in a vale lease there is no occasion for a proviso to hinder the tenant's selling of stones; nor, in a chiltern one, for obliging a tenant to plough water-thoroughs, or gutters; nor in a lease of a marsh farm, to do either, but, instead thereof, to bring on stones, chalk, hurlock, bushes, or other materials to mend by-ways, or gate-ways, and drain ditches, or other watery receptacles: or to cut water-thoroughs under ground, and keep up flood-banks, &c. in good repair: which leads me to describe the character of a good tenant, as follows, viz.

The Character of a good Tenant.

A good tenant oftentimes makes a landlord good, as, being one, that, after the dwelling-house,

house, barns, stables, and outhouses, as well as gates and styles, are put in repair by the landlord, he will endeavour to keep them so, not altogether at the landlord's charge, but will mend a place at his own small cost, although he is not obliged to it, as knowing, that a stitch, or nail, in time, may save nine. Thus, by nailing up a board, or mending a little hole in the thatch, or spurring up a gate, or style-post, before they are quite damaged, he may save a landlord a considerable charge. Or, if the case is so bad as to require a landlord's intire expence, then timely notice will be perfectly necessary. I knew a tenant who very much wanted a better dairy-room than he had, in a great farm; upon which, he asked it of his landlord, as a favour to grant him one. The landlord was not obliged to any such thing by the lease, yet, to encourage his tenant, readily consented to pay for doing it; and it answered both their purposes in the end, for the tenant got more room, and a cooler place, by sinking the ground three feet deeper than it was, for lower he could not go for the springs, and the landlord added a conveniency to his farm that was not before. And, that he may be ambitious of deserving this character, he should have a long lease of the farm granted to him, for one and twenty years, where a landlord has power to do it, that he may be satisfied what he lays out in
manures

manures and dressing, or in planting trees, quicksets, or in other improvements, may return their benefit to him, time enough for his being a reasonable gainer by them. Somewhat on this account, I have known a tenant been so bold, as to be at the great charge of sinking a pit in the same field, and chalking all the ploughed land he rented by lease only for nine years, although such chalking would not be worn out, with good management, under fifteen or twenty years; because, as the case stood, the landlord could not grant a lease for a longer time. Another, on the certainty of a long lease, will buy great quantities of horn-shavings, hooves, hair, or such other durable dressings, and from time to time will lay them on his ground, to the great support of it, and will continue such his good husbandry, where he has a time ascertained to him accordingly; because he ventures his money, with assurance of enjoying its value to the end of his term. Another will be at the expence of digging marle-pits, and laying quantities of this lasting dressing on his land from time to time, under the satisfaction of his wearing it out, before he leaves the farm. Another will not fear laying out his money to drain wet lands, by making and scouring up ditches, ponds, or cuts, and water-courses under ground, to carry off waters, that used to chill and spoil the growth of his crops of corn; to
make

make and keep up banks, and other water-fences. But these works are commonly performed at the landlord's charge, as being too great an expence for a tenant to bear. Others will make and plaish hedges in such a manner, as may improve their growth; will, every time they do it, scour up their contiguous ditch, or throw up such a sufficient quantity of mould on the flower-bank (as we call it) of a foot-hedge, as will cause it to grow apace, and will fence, and preserve young hedges, and trees in the best manner he can, from the destructive bite and rub of cattle. Others, by virtue of a long lease, will be tempted to plant fruit trees, and be at the charge of casing them in, or otherwise securing them from injuries, till they are able to support themselves; as is the custom in *Herefordshire* in particular, where this practice is carried on by some with the greatest diligence, so that, at the end of one and twenty years, they have been able to buy what before they rented. In any case, it must be a very great improvement to both landlord and tenant, and of vast service to the neighbouring counties, where they are strangers to the like good husbandry. And, why such profitable management is not carried on by tenants in other counties as well as this, must be owing to the ill conduct of landlords, who, where their land will admit of it, ought so to encourage their tenants to the doing
of

of it, as would provoke them not to neglect it. But I know many will object, that either their ground is too wet, or too dry and poor, and that it lies in open fields, and thus trees may be exposed to any rapacious hands; but these excuses are commonly frivolous. As to the first, there is a way to plant vale spewey grounds with fruit trees, to great advantage; and, if such ground lies in open fields, yet it ought not to discourage this good work, provided the land is situated at a good distance from town or village, and near the farm-house; then, I say again, such ridge lands may be planted with apples, or pears, or walnuts, and made to answer with great profit. As to the other objection, it is often practised to make poor land rich, by making a large fosse, and bringing virgin mould from elsewhere, or first by improving the old earth with suitable additions of proper manures or dressings. An example of this is about seven miles distant from my house, in the vale of *Aylesbury*, where rows of apples and pears flourish to admiration; and, in some years, such trees, and the sward-grass ground they stand on, will pay beyond every thing else in the farm, provided they are planted at a proper distance. It was about the beginning of *October* that I gathered my apples, and from only two middle sized trees I had twenty bushels,——worth three pounds,

pounds, for on the seventh of this month, 1742, the common part sold at *Hempstead* market for three shillings a bushel; so that the usual objection, of apples being so plenty by numerous plantations, as to sell for a trifle, is here proved wrong. A day-labourer, who lived just by me, planted several fruit trees at his own charge, on a small spot of ground belonging to the cottage he rented, and, though a tenant at will, lived to enjoy the profit of them many years. But Mr.

of *Highbury Hill*, in *Middlesex*, may be justly ranked in the number of the best of tenants, for improving his landlord's farm, which, by having a long lease of, at a reasonable rent, it so animated him to grub up all superfluous bushes and shoots, to destroy thistles, and kill couch grass, and other weeds, that he brought the farm into so good a condition, that, towards the end of his lease, his landlord courted him to take a new one at the old rent, though he had made the same, by his good husbandry, one third, at least, better than when he came to it; but, having got a tolerable subsistence by his industry, being advanced in years, and what was most discouraging of all, being thwarted by untoward servants, so that he could not manage so well as formerly, he refused it, to live in a more retired life, for he only bought large quantities of hay of his neighbours, in hopes of getting a penny

by a rising market. This he declared to me, and which I believe to be matter of fact, as he is a person of a fair character.

The Character of a bad Tenant.

Here I must change the scene with a great deal of reason; because a bad tenant-farmer is not only an enemy to his landlord, but to the common-wealth in general; for as all men live by the farmer's industry, so much as that fails, in obtaining plentiful crops of corn, grasses, &c. so much he is wanting of being a good tenant, and good common-wealth's-man. And yet this is the very case of thousands. The first was a tenant, that lived within a few miles of *Wendover* in *Buckinghamshire*, who rented a very large farm several years, and kept a sufficient number of horses for working the same; but was so obstinately ignorant, as to believe he was in the right, when he was in the wrong, as his crops plainly discovered; for this man, who for the most part made use of wheel-ploughs, would not oblige his plough-man to go deep enough, to extirpate the roots of weeds, and therefore not only oftentimes missed of getting his ground into a fine sweet tilth, but, in the next season, his wheat, barley, and other grain, was so pestered with weeds, that they crippled his crops, soured his ground, and multiplied

multiplied their species. Thus going on from year to year, his crops grew worse, instead of better, till at last he was forced to quit the farm; but how much he lessened the rent, by his bad management, I cannot say. This, I know, that a far better tenant is come in his room, who, I hear, goes on exceeding well, by ploughing the ground as it should be, and getting great crops off it; for this man proves as wise, as the other was ignorant; because, finding where the other was wrong, he fell directly into a method, that brought the ground by degrees into good order, and that was thus: He got a narrow foot-plough, and clapped a mortaised pecked share on it, which gave him an opportunity of making this plough enter the ground as deep as he desired, and, by this means, he turned up a fresh earth which had lain buried many years, and at the same time tore up the roots of weeds that had got footing here out of knowledge; so that a little manure now went a great way, for the fresh mould was in such heart, as alone was capable to produce good crops of grain, and they such quantities of straw, as in course would create large and several dunghills in one year; and thus he improved the farm, and is now in the greatest reputation for a topping husbandman in the country he lives in. The next I shall take

notice of is one that rented a farm of above a hundred a year, who, having a lease of the same for nine years, acted the bad husbandman to a great degree; for although he came after a tenant who did so well, as to take a larger farm, yet he acted so averse to the other, that he went out of this, into a very little farm indeed, which occasions the following character of him: He suffered his horses to go into his stable with dirty legs, and with such sticking dirt on them, that he could not get off without washing, and then cracks or scratches bred in their heels, and from such, sometimes, proceeded greasy heals, &c. Two flocks of sheep have rotted in one year; near a hundred hens have been suffered to lay their eggs in hedges, and other open places, and so carried off by any that could come at them; his hogs would often run among his green wheat, and other corn, to the spoiling great quantities of it; his ground was very much infested with thistles, and, for want of sufficient dressing, returned him such wretched crops of corn, as obliged his landlord to seize his effects for rent. The third was a tenant at will, and a crafty knave, who rented a farm of about forty pounds a year, in *Hertfordshire*, that knew the method of farming as well as most *Chiltern* farmers; but, finding he was not close tied to articles under hand

hand and seal, he took the liberty of making, as he called it, the best use of his time, for, knowing that the young owner was to take the farm into his own hands in a short time, he made it his business to get all the heart he could out of the ground, for nourishing his crops of corn: Accordingly, he ploughed often, to get the earth into a fine tilth, and sowed it with wheat, barley, oats, &c. with little or no dressing, and this he did for the last two years. The same sort of villainy he acted with regard to the hedges, for these he cut up; and plashed so very thin, that they would hardly keep out cattle the very first year, nor fully recover their due growth, under ten or twenty; and all this was done to get as much faggot-wood out of them as he could; neither scouring up the ditches, nor throwing up flower-banks, which is a most necessary work to be done, every time a hedge is made. In short, this tenant ransacked all he could out of the farm, before he went off. And so did another, almost in the like case; who, being to leave his farm, took the opportunity, while he might, to sow all the ground he could with wheat, against the harvest 1741, and being to leave it at *Michaelmas* 1742, he sowed all the ground he could, the following spring, with barley, pease, oats, &c. as having no room for sowing wheat this

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year. Thus, by sowing all the wheat he could without any dressing, for 1741, and sowing all the *Lent* grain he could without any dressing, for 1742, he so beggared the land, as to do it a very great diskindness for several years to come. But I have not yet given a character of a worse tenant than all I have wrote on, for this was a villain in grain, because he acted the malicious parts to a very high degree, thus : Being obliged to quit the farm he had for several years rented in *Hertfordshire*, for his ill behaviour, he was resolved to be up with his landlord, and accordingly took the opportunity of sowing part of the farm with wild-oats in the night-time ; but, unluckily for him, a person happened to spy his transaction, and discovered it to his landlord, who made him pay sauce, and branded him for a rogue to the whole country about him.

C H A P. IV.

An account of wheat, barley, and other grains and grasses ; trees, garden-ware, cattle, insects, &c. for the year 1740—1, and 2.

AS a very violent frosty winter preceeded the harvest, 1740, and had particular influences on many things, I shall take notice of its effects on corn, cattle, &c. as they occurred to my knowledge at home and abroad.

That

That wheat, which was sown in chalk, gravel, or other light soils, was in most places a very thin crop. One of the best farmers in our neighbourhood, who had about thirty acres of wheat growing on the north side of a chalky hill, in *February*, offered any one the whole for ten shillings an acre; but it was thought they were not worth half so much, because the frost and cold winds had killed the greatest part of it.

Another farmer, about two miles off me, ploughed up fourteen acres of wheat, that was sown on a poor gravelly soil, in despair, and sowed the same land with Lent-grain.

Another farmer, who had wealth enough at command, was so covetous and negligent, as not to dress an eight acre gravelly field with any thing, though he sowed it with wheat in four-thorough fitches. The consequence was this, the frosts and cold winds got down and starved its roots in such a loose earth as this was, which obliged the owner to plough it up, and sow the same land with turnips; and, on being asked the reason of this his bad management? he said, he once came by a full crop on the same ground without any manure, and he was in hopes to have the like success this time, according to the old saying, *A bad husbandman has a good crop once in seven years.*

A gentleman, in *Aylesbury* vale, finding his wheat-crop cut off on the ridge-part of his

half-acre lands, harrowed in barley, and it proved an excellent crop. His management was this: The latter end of *March*, he harrowed the ridge-part of each land for near half a pole, or more, wide, once in a place; then sowed two casts of barley-feed over the same, and harrowed it twice in a place, which covered it well, because the great frosts had hollowed the ground very much.

Many farmers in the *Chiltern* country were to blame on this account, I mean, for not sowing and rolling in barley-feed on their two and three bout-lands, where most of their wheat was killed by the weather; for by this they had so fastened the earth about the remaining wheat-roots, that were alive, as to keep the frost from farther hurting them, and bid fair for a full crop of corn, for the barley would have been ripe at the same time the wheat was; and this might have been done the safer, because there was hardly any birds or insects at that season to hurt the new sown corn; and it would have been much better than harrowing it in, by reason the tines would have killed most of the remaining wheat-roots. Others thought it good husbandry to plough up their ruined wheat, and sow the same with barley, as many thousand acres were, especially the lighter sort of grounds that were dressed with dung; for this increased the evil, by making the

the

the earth so light and hollow, as to let in the frost, and kill the wheat-roots; and this was the reason, that in the latter part of that summer so many fields were over-run with may-weed, and in the former part with charlock.

The lands that fared best this year, were the clays and stiff loams, whose surfaces became so hard and crusty, as to keep out a great deal of the frost, and made the wheat stand strong. Next to these the flat grounds succeeded, that were sown with wheat, particularly the small, well-sheltered inclosures that lay defended against the violence of the north and east winds, which blew most part of the spring, and cut off a great deal of grass and corn; but, most of all, that grain which was sown in high ridge-lands, as they lay in open common fields. Others again had courage enough to trust providence, and let their wheat take its chance; and it was remarkable, that several, who had a very poor crop in the spring, had a good one at harvest.

An old farmer in my neighbourhood, aged eighty-three years, told me, that, about sixty years ago, there happened a very frosty winter, and that no rain fell from *Lady-Day* to *Midsummer*, which caused wheat to rise to fifty shillings a load; but, after rain fell, the Lent-grain came up as thick as hail; the wheat thin and short, yet so well eared, that two shocks

produced a load, and reduced the price to fifteen shillings a load the following harvest.

In 1740, the *Thames* was frozen over, by a two months frost, and an ox roasted whole on it, as it was done in 1716, which was so severe, as to enter the earth eighteen inches deep, in many places; which, upon a thaw, so mellowed the ground, that it was one horse's draught in four difference to other times, whereby the land with one ploughing, was made so hollow and fine, as it used to be with two or three ploughings; and, what was surprising to me, on digging about the roots of a young cherry-tree in my ground, there was a darr and an humble-bee lying just by one another alive, and not above six inches below the surface, on the nineteenth of *March*.

After this we had a melancholy sight; for, as soon as the wheat had done blooming, vast numbers of small black flies attacked the wheat ears, and blowed a little yellow maggot, which eat up some of the kernels, in others part of them, and which caused multitudes of ears to miss of their fulness, acting in some measure like a sort of locust, till rain fell and washed them off; and, though this evil has happened in other summers to the wheat in some degree, and not done much harm, yet, if the good providence of God had not hindered it, they might have ruined all the crops of wheat in the nation.

Now

Now might be seen almost every where full crops of barley, notwithstanding a long dry summer, that continued so till about the middle of *July*, which occasioned this grain to be under the misfortune of two or three conditions of ripeness at harvest; that seed, which lay deepest in the earth, was ripe first, that which lay next was almost ripe, and that which lay uppermost in the ground was near green.

Oats likewise, and pease, were for the most part plentiful crops, because we had many fine showers of rain between the middle of *July*, and the latter end of *August*, when they were mown and cut down; but the horse-beans fared ill that were sown in fields, on account of the dry season, which stunted their growth, and so parched up their blossoms, that few of their stalks podded.

Natural and artificial grasses were likewise the poorest crops I ever knew, especially where the most dung was latest laid on, which so hollowed the surface, as to let in the frost, that chilled the roots and kept the grass from growing; then directly succeeded a dry, cold spring and summer, which farthered the misfortune, and stunted the grass.

Between *Edgware* and *London*, the grass-fields looked all yellow instead of green, by being run over with the worst of grass, called the butter-flower.

A person near *Stanmore*, in *Middlesex*, had but four loads of hay off a ten acre rich grazing field.

Another near *Barum-wood*, who rented forty pounds a year, in all his meadow-ground had no more than eight loads of hay off his whole farm; for, in many fields of grass, it happened, that, this dry summer, the dung drove before the scythe, occasioned by being late on, and thereby served to burn up the grass, instead of nourishing it; and, in the vales, the drought continued so long, that it brought them under almost the same fate in their meadow-grounds, all which caused hay to rise in the *London* market from thirty-six shillings to three pounds a load; for the drought was so great as to affect the deep-rooted sainfoine, and caused it to be a poor thin crop, although the roots of this grass run into the chalk and gravel above two feet deep.

At *Gaddefden*, where we used to have two bays of hay, we had but one off our clayey meadow land, and yet came off better than many others; for some thought it not worth their while to mow any of their short, thin natural grass, although it grew on land that they rented at thirty shillings an acre.

Cattle likewise very much suffered by the frosts and droughts, insomuch, that the graziers were forced to feed their field oxen with hay, in the height of summer, so that they were sold in *August* and *September*, 1740, half fat in *Smithfield* market.

But this was not all the graziers misfortune, for they suffered much by buying in guest-cows
in

in *April* and *May*, in hopes to fat them in their grazing grounds, and this to a great number; but it not proving so, by the shortness of their grass, they became over-stocked, which forced them to let many of these cows take bull, to keep them on for calving the next year, to their great loss.

It was almost as bad with the dairy-men; one of whom, for want of whey and skim milk enough, was obliged to sell a sow and ten pigs at *Leighton* market, in *Bedfordshire*, on the thirteenth day of *July*, 1740, for twelve shillings and sixpence, that would fetch in *July*, 1742, four pounds. A scarcity that so affected the butter and cheese, as to cause the first to be sold in our country for eight pence a pound, *Warwickshire* cheese three pence half-penny a pound, beef with us three pence a pound, veal a groat, and in *London*, in the month of *April*, 1740, mutton was sold for six pence a pound.

In short, our rivers were all frozen up in the winter, and, in the summer following, our ponds, for the most part, dried up; which gave us an opportunity of cleaning them out, and making use of the mud and dirt to form a pile or heap, by mixing chalk or dung with the same, for an excellent compost.

To this I add, that in *Aylesbury* vale their meadow ground was so burnt, and grass so short, that they were forced to cut down ashen-boughs, and
give

give them to their fatting oxen; and, why their lower vale grounds had given very good crops of wheat this year, while their ridge or higher grounds suffered, may, in some measure, be accounted for thus, viz. Not altogether because such ground lay low, out of the power of winds; but also, because their springs commonly lie so shallow here, that in winter time, the warm streams which arise from such springs below the surface, give a warm moisture to the roots of the wheat, and prove a nourishment to them, while that which grows in higher land perishes with cold; this help, with the goodness of their warm-natured earth, and low situation of it, returned some farmers a vast increase, while others could not pay their rents. Therefore, farming is called a lottery, in respect to the many incidents that crops and cattle are liable to.

Oak-trees were in many places damaged, by the frost's getting into their trunks, which caused their sap to swell into an ice, that rived and burst many of their bodies into cracks; yet many fruit-trees, as the frost was joined by frequent rimes, were improved by it, by their impregnating the trees bodies and arms with their nitrous qualities, which produced a great increase of fruit; for it is an old country-saying,

A great Rime Year,

A great Fruit Year.

And

And it happened accordingly in a great plenty of cherries, apples, pears, &c. But it killed most garden ware, insomuch, that noblemens gardeners could not supply their masters tables with a sprout.

This year proved the freest from slugs, grubs, caterpillars, darrs, worms, wasps, flies, adders, and many other insects, that ever I remember; not a slug was seen all the summer, because the frost had entered the ground so deep as to kill most of them, which gave such a security to our young crops of turnips, cole, favoys, and other field and garden ware, that we suffered in the summer by nothing but drought.

Bees in many places died in their hives; one of my neighbours lost three out of four, and birds perished in vast numbers.

Here I thought to have finished my account of particulars that happened in the farming business this fatal year of famine, but considering that a retrospection of these casualties may hereafter prove instructing to my reader, I shall further enlarge as follows: viz.

In this year, the month of *January* was a very snowy season, all the ground being under snow all that time, which starved or froze many of the lesser fowls to death; a dunghill cock, that used to roost on a tree, was found frozen dead, and the same fate had many old crows.

On

On the twenty-first of *June*, 1740, barley-flour was sold for eighteen pence a peck at *Gaddesden*, for making bread; and on the 31st day of *July* following, the first new barley, that was brought to *Hempstead* market, out of a sandy ground in *Bedfordshire*, was sold for eight and twenty shillings a quarter.

This long and violent frost began on *Christmas-day*, 1739, and was so severe as to rot turnips so much, that, by the fourteenth day of *January*, many acres of the forward sown stunk like carrion, and caused great numbers of sheep to fall sick and die; and those that escaped, from being near fat on turnips, fell very lean, so that very few fattened on turnips this year, but many were fattened with pease and hay. This leads me to the publication of several cases, as follows, viz.

Case the first. In the parish of *Studham*, a farmer sowed fifty acres with wheat, which grew in his gravelly, loamy, inclosed fields, that lay on such a high situation, as gave the frosts room to kill so much of it, that he had not quite one bay full at harvest.

Case the second. Another greater farmer than he who lived about two miles from him, in *Flamstead* parish, had hardly any more wheat this harvest, than what could maintain his family, and sow his ground for another crop.

Case the third. In some of the high chalky lands in *Ivinghoe* parish, the frost had so penetrated

trated this light earth, that on the twenty-eighth day of *August*, 1740, I saw some very poor wheat standing which seemed to have more red poppy among it, than there was wheat; while other grounds in the same parish, that were stiff loams, and lay low, bore a good wheat, and as much as ever, I believe, was known.

Case the fourth. Near *Dunstable* downs, in a white hurlucky soil, that lay exposed to the north and east winds, there was a farmer who was forced to pull up six acres of wheat with hands; others mowed some, as being too thin and short to reap. Another did the same in his poor gravelly soil, and had but half a bay of wheat for sowing many acres.

Case the fifth. In the same whitish land, another farmer had nine acres of barley standing, on the 17th day of *December*, 1740, some of which was full ripe above a fortnight before, and the rest full green, by means of the late frequent showers, that brought up those seeds which lay in the uppermost part of the surface, and which, by the long drought in the former part of this summer, could not take sufficient root to grow and ripen in time.

Case the sixth. In *Whethamstead* parish, *Hertfordshire*, a farmer was forced to pull a whole field of wheat of twelve acres with hands, and got only five shocks of ten sheaves each from every acre; yet the farmer had elsewhere twenty shocks

shocks of wheat from an acre, that was thought to yield two bushels of wheat each shock. The twelve acre field was a loamy, wettish soil, and lay flat and very high, but the fruitful fields were more sheltered from the severity of the north and east winds, which this year were the chief occasion of these misfortunes.

Case the seventh. That wheat which grew this year in a full crop was so full kernalled, that the large corns, for the most part, yielded near five bushels of flour, out of five bushels of wheat; and the drier sort fetched six shillings a bushel, on the eighteenth day of September, 1740, at *Hempstead* market.

An Account of Crops of Grain, &c. for the Year 1741.

The last year's scarcity of wheat and other grains, caused wheat, and all other corn, to hold dear part of the next year. All the winter, to April, 1741, wheat sold in *Hempstead* market, from thirty to thirty-five shillings per load; barley twenty-two shillings per quarter; oats two shillings and two pence per bushel; pease, four shillings, and horse-beans three. In April I sold red *Lammis* wheat for about six shillings a bushel; but all the preceeding winter, and the following spring, were attended with fine mild weather, and by means of many showers, that began about the first of June, 1741, wheat, barley, oats, beans, and pease, flourished to admiration; so that there were

were never seen finer crops on the ground than on the fifteenth day of *June*, when dry weather began and continued a great while; which gave the wheat a fine blooming-time, so that it fell in *Leighton* market to about twenty four-shillings a load, on the sixteenth of *June*, 1741, and to a lower price afterwards, till it came to three shillings a bushel in *July*, 1742.

An Account of Crops of Grain, &c. for the Year 1742.

The winter, 1741, was a very mild one, and after that succeeded a long continuance of dry weather, infomuch that we had little or no rain from *March* to the twenty-second of *June*, 1742, when a great thunder storm happened, that lasted almost all night, and produced showers till about the twenty-sixth of *July* following, at which time most of the farmers in the southern parts of *England* began their harvest. By this long drought our mowing natural grass was so prodigious short at *Midsummer*, that it tempted us to let it stand till near harvest before we mowed at *Gaddesden*, and they that forbore latest fared best; however, in the main, we had the least crops that ever I knew, as well as those grass-farmers in *Middlesex*; and, the rain keeping off so long, the aftermeath near *London*, did not get such a sufficient head as to make it worth mowing in several places, which caused old hay to sell in *July*, 1742, for about three pounds ten shillings a load; this extremity
of

of weather hindered me from sowing any of the lady-finger grass-seed. But, in the vale of *Aylebury*, the aftermeath grew so fast, that, about the middle of *July*, the graziers were in great want of cattle to feed on it; for they had but a very small stock of horned beasts before, because cows were never sold dearer, I believe, than they did this spring, 1742. Wheat, in vales, I think, was never bigger, and enjoyed a fine blooming time, in an upright posture, till the thunder-showers fell, and laid most of it flat. The horse beans, that began to kid before the rain came, were stunted by the long drought, and never shorter; but the pease of all sorts were never in a better condition. Oats recovered well, and barley in stiff grounds was generally good, but on chalks, gravels and sands, as bad, vast quantities never shooting into ear. The apple-trees were seized by the caterpillars, which caused those that bloomed forward to fare ill, but the latter bloomed grew in plenty. I never had more kerroon cherries in my life, on a great number of young trees of my own planting; I sold ten dozen at a time of them at *Leighton*, for seventeen pence a dozen, in *July*, 1742. My white-hearts, and all the budded sort, as well as the wild cherries, were large crops.



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